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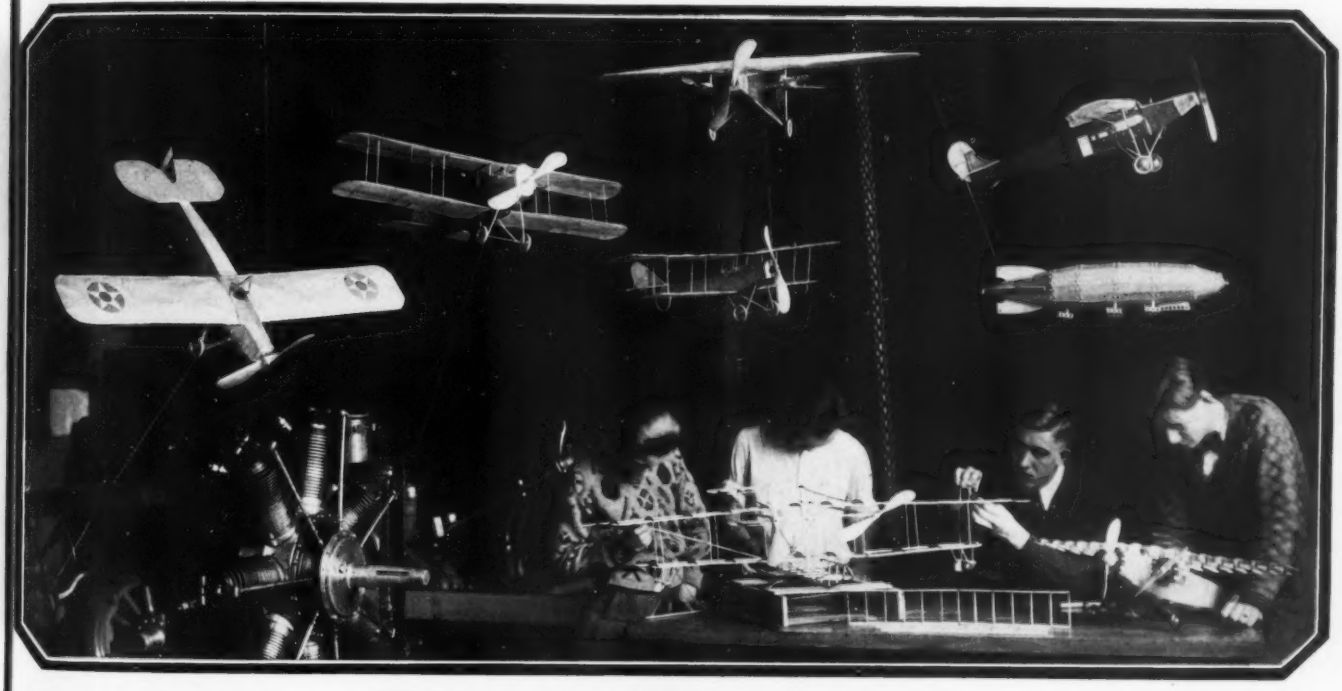

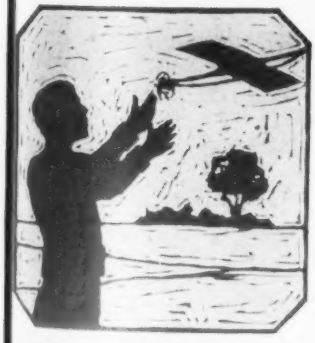

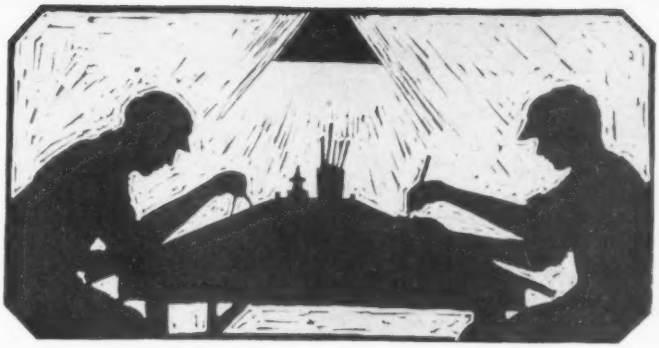

JUNE 1929

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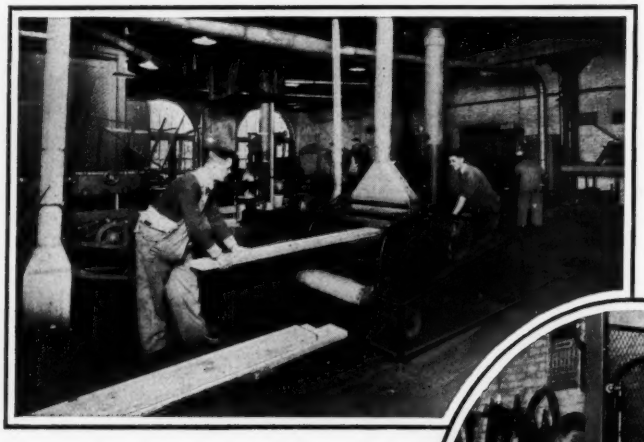

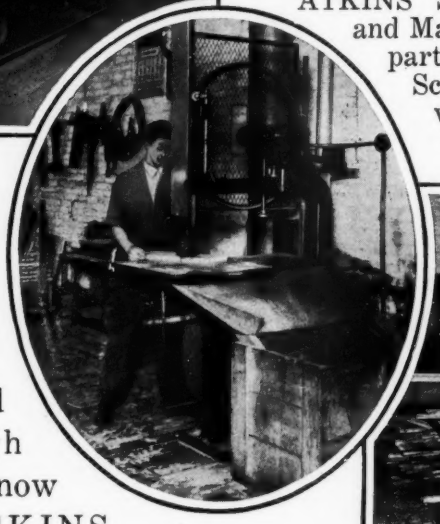

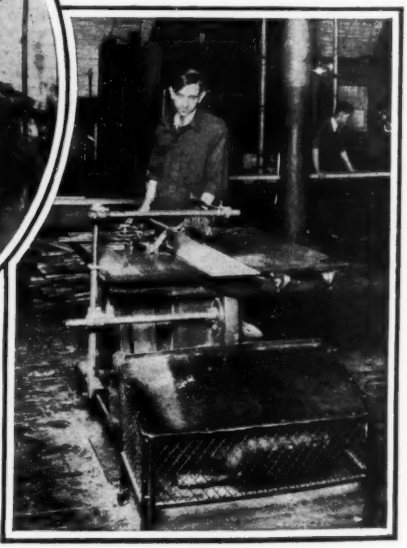

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VOL. XVIII
No. 6

INDUSTRIAL-ARTS MAGAZINE

JUNE,
1929

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The INDUSTRIAL-ARTS MAGAZINE wants to visit you, no matter where you spend your vacation. Please send us your summer address.

LEST YOU FORGET

The time for closing the school year 1928-29 is approaching. Do not let it catch you unawares. Be sure to read the editorial "Timely Advice" on page 218 of this issue.

THIS MONTH'S COVER

The picture on the cover of the June issue of the INDUSTRIAL-ARTS MAGAZINE shows students of the course in aeronautics at the Morrison R. Waite Senior High School, Toledo, Ohio, at work on airplane models. Mr. S. H. Hurtuk is the instructor of this class.

TABLE OF CONTENTS

Science for Part-Time Vocational Classes 207
Colin G. Welles
Reaching for the Moon 210
M. C. Richmond
New "Dimension" Design 215
C. A. Kunou
EDITORIALS: Recognition of Good Craftsmanship — Timely Advice —The Annual Exhibit — The Part-Time School — Are We Improving? 218
Equipment for Industrial Mechanics in New Cosmopolitan High Schools 220
Earl L. Bedell
Related Drawing for Beginners' Woodwork 221
Martin W. Peterson
Perspective Drawing the Mother Tongue of the Graphic Languages ... 222
Frank W. Walsh
Vocational Printing in the High School 223
Charles L. Detrick
The School Exhibit 224
Jos. J. Lukowitz
Hamburger Industrial-Arts Work 225
Laurence Parker

SUPPLEMENTS

Unusual Joints ..... No. 138
John F. Faber and Jonathan Bright
New "Dimension" Design ..... Nos. 139 and 140
C. A. Kunou
A Pig Bread Board ..... No. 141
Charles Rice

PROJECTS AND PROBLEMS

Unusual Joints 226
John F. Faber and Jonathan Bright
A Pig Bread Board 226
Charles Rice
The Weight of Lines Used in Mechanical Drawing 226
August Flam
The Use of Sole or Heavy Leather in Art 226
L. C. Ude
Colonial Candle Holder 227
J. W. Bollinger
A Typical Unit on Painting and Decorating 228
Henry Wagner
Clock Cases as School Projects 229
W. W. White
The Use of the Type Sheet 229
R. Randolph Karch
A Suggestive Rating Scheme 231
Frank P. Rich
Instruction Sheet on Squaring Stock in the Shaper 232
Edward N. Wallen
Wrought-Iron Stand 232
Lindsey Boozer, Jr.
A Feast of Lanterns 233
Ethel Ernesti
The Modernistic Lamp 234
Deane E. Eldridge
Model Airplane 234
R. B. Newhauser
A Folding Lawn or Camp Table 236
Geo. H. Wichmann
Attractive Mirror Frames 236
Frederick W. Voss
Household Reminder 238
Harry W. Kroll
A Tool Cabinet for the Farm Shop 238
M. F. Thurmond
Auto-Mechanics Test 239
W. G. Hjerstedt
Classic Carved Designs 240
Franklin H. Gottshall

Association and Convention Activities 241
Now, Are There Any Questions? 244
New Publications 244
Among the Industrial-Arts Teachers 28a
School Shop Equipment News 33a
News and Notes 40a

(The articles contained in the Magazine are regularly indexed in "The Reader's Guide to Periodical Literature," "Education Index," and "Current Magazine Contents."

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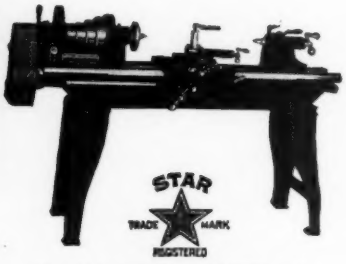
STAR LATHES



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THE INDUSTRIAL-ARTS MAGAZINE

Volume XVIII JUNE, 1929 No. 6

Science for Part-Time Vocational Classes

Colin G. Welles, Milwaukee Vocational School, Milwaukee, Wis.

SCIENCE is not taught to students in vocational schools in order that they may be made scientists. It is taught rather to explain the world they live in than to force on them uninteresting details which only technically trained people are able to interpret. In other words, accurate, popular interpretations of general laws which find expression in the daily life of the average person should decide the limits of the field. To illustrate: the reproduction of bacteria has a very definite meaning and value to the scientist, but it also has a valuable meaning to the average person in explaining the unbelievable speed at which certain common ailments develop. The fact that bacterial nucleii are diffused throughout the cells is of no less scientific value, but the fact that the nucleus is diffused, cannot be made a part of any lay person's experience.

Were I asked to give three good reasons for teaching "academic" science in part-time vocational schools, I would answer in the following manner. First of all, I think that knowledge, no matter whether it has to do with chemistry, or history, or biology, tends to make for better thinking, i.e., more logical thinking. Logical thinking is the only way which will rid our lives of the hundreds of superstitions with which we are at present securely circumscribed. Secondly, I would teach science in part-time vocational schools to help youth to understand the world it lives in and as a consequence of this, to win a glimpse of the "good life." And thirdly, I would teach science so that through an understanding of the natural phenomena, the boys and girls may better know about the world and their places in it, and from such knowledge they may develop a cosmic sense which will help them to live sympathetically and generously with their fellow beings.

So far as trade sciences are concerned, treatment of those particular branches should be presented in close conjunction with the trade studies themselves. What good does a boy get from an understanding of the technical explanation of heat treatment of steel when he is preparing to be a shoe cutter or a printer? If the trade science is made general enough to teach the details of each trade, then it will be useless to all, and it will be a hodgepodge which no teacher can successfully teach, and in which few students can be interested.

Teaching of trade sciences by tradesmen might be severely criticised by some who forget that science is no unreasonable secret. Any individual who is intelligent enough to be trusted with a class, can digest with sufficient accuracy the academic facts concerning the scientific processes which concern his particular trade.

On the other hand, only men who have had very careful scientific training should be allowed the opportunity to select lesson material and translate into empiracal terms the meaning of more or less abstract scientific facts.

Summarized briefly then, academic science in part-time vocational schools resolves itself into successful popularization of scientific facts which actually touch the lives of the student.

I cannot stress too strongly the proper selection of material. In my opinion, the success of teaching depends entirely upon the interest that can be aroused in the student. A dull subject, even if well presented, is the quickest way to make a youngster wish he were somewhere else.

Even the title of a lesson will encourage or discourage student interest. A student confronted with a unit title-sheet printed boldly "A Study of Salts" will immediately turn to his friend or to the window for something interesting. But such a prosaic subject as atmospheric pressure may be made quite alluring when it is labelled "The Handy Man Around the House."

In the Milwaukee Vocational School science subjects are taught with the aid of unit sheets which have been prepared, in some cases by individuals, and in other cases by cooperating groups. It seems best to have the materials collected and written up by each teacher because a "canned" lesson which someone else has written can only be embellished by additional information if one is intimately familiar with the purpose of the unit.

Unit preparation is a distinct art. Bare facts on paper are deadening. But facts, written with a certain amount of humor and life will attract attention, as a newspaper feature will attract the attention of those who are not even interested in the bare facts of the particular article. And so, it is my belief, that feature writing in newspapers (of course, with a little more respect for the truth) is the best example to follow in

writing science unit sheets. If a science topic is so dull that even an expert is unable to make an interesting story from it, the material should be thrown out and material which lends itself better to popularization should be substituted for it. There is no dearth of interesting subjects. There are too many of them. The difficulty lies in picking from the great mass those subjects that are, at once, most interesting and most pertinent.

The following titles serve to give an indication of the type of lesson which has proved to be satisfactory in classes in chemistry and physics, some for boys and others for girls.

Chemistry and the Kitchen Kettle.
Chemistry and our Baking—Leavening Agents.
Chemistry of our Colored Clothes—History of Dyes.
Convection of Heat and the Ice Box.
Fire—and Why Things Burn—Oxidation.
A Few Things about Light.
Production of Sound.
The Substances that make up Water.
Fire Extinguishers.
Colors.
Food Adulteration.
Making Static Electricity.
Wiring of Flashlight Circuits.
How to do Electroplating.
Microphone Construction.
Connection of House Light Circuits.
Sources of Heat.
Cohesion and Adhesion.
The Kind of Levers.
The Expansion of Metals.

As I am more familiar with the lessons given in beginning science, I shall limit my remarks to the beginning course called "In and About the World of Science." This title has been chosen because the material is not confined to one branch alone, and an association of such fields as astronomy, geology and biology cannot be designated by any single name. The following list gives the titles of the lessons which, for the most part, are given to both boys and girls.

1. The Deep Blue Heavens.
2. Our Sun Family.
3. The Importance of the Sun and the Moon to us.
4. Stories the Rocks can Tell.
5. Weather and the Weatherman.
6. Seasonal Changes and their Effects on the Earth.
7. The Strangest and Simplest Creatures that ever Lived.
8. Bacteria, Good and Bad.
9. The Business of Living—For a Plant.
10. How Insects Live.
11. An Insect Community.
12. The Story of Fish.
13. Ancient Animals.
14. Wild Flowers.
15. The Story of Man.

The purpose which I have always borne in mind when selecting lessons for this work, is to present subjects that will picture as completely as possible the average student's ordinary environment. This task would be less difficult if the number and the extent of the lessons were not limited. But with a very definite allotted time one must select topics which cover large blotches of the student's horizon.

The logical arrangement, it seems to me, is to go from the general to the particular, and, in an historical way, to give the student a conception of the development of the earth. So the first lesson that we give is one on "The Deep Blue Heavens." Next we teach of sun and its family, giving the earth only its proportional niche among the planets. We follow this with a geological lesson on the properties of the earth. Thence it is easy to discuss more familiar biological laws and facts by drawing on examples within the range of the student's experience as much as possible.

Of course, each subject has its ramifications and a certain limited coherence between lessons is aimed at. The narrative thread between the first lesson on the universe and the second lesson on the planet family to which the world belongs, is obvious. The lesson on the structure of the earth easily suggests its successors on plant and animal life. In tracing the earth's history, fossil animals and plants are introduced so that the student is given a conception of the antiquity of life.

By way of giving certain elementary ideas on the composition and motion of the air, clouds, thunder and lightning, storms, snowflakes and other atmospheric phenomena, one lesson is devoted to the weatherman and his work.

The simplest animal and plant forms are studied first among the living creatures. And an idea of the intimate kinship of these simplest plants and animals is conveyed in a study of the amoeba and the paramoecium, the slime mold and the euglena. In this connection, a lesson on how a plant lives seems to me to be a very effective means of teaching rudimentary botany.

Lessons on fish, insects, ancient and now extinct animals, and on the laws of adaptation to environment, are all given a universal significance and consequently, are all, somewhat, related. Yet each has an independent story to tell.

The final lesson is man. It is not designed to give any physiological information but it explains man's relationship to other creatures, and gives the student an idea of the development of human beings since the time of the old stone age.

So much for the selection of material. Now as for the method of presenting the material.

Perhaps a specific illustration will be the most effective explanation of teaching methods. Take for instance, the following lesson:

Weather and the Weatherman

The whistling winds which drive north from the warm tropics pick up and carry with them on their long journey over sea and land great quantities of water. The warm air is sponge-like and picks up moisture as it floats low and high in wind currents, until at last it is cooled by some breeze, usually coming from the north.

But the very cooling of this warm, moisture-laden air is like squeezing a sponge. The water spouts out in rain and washes down over mountains and over plains in its search for the sea from whence it originally came. Sometimes moisture is left in the cooled air, but for the most part it is squeezed (or condensed) out of the warm air once it meets the cold blast.

So it is that from field and lake and sea, warm air currents are forever drawing moisture to form the clouds we know so well.

When the air above the earth is warm, and when high up the moisture has met some cooler blast, it falls as rain. If, on the other hand, the air high up is warmer than the fields of cold air near the earth's surface, the falling moisture changes, even on a summer day, and falls to the earth in round balls of frozen rain, called hail.

Thick wet air usually sails high. Up where the warmth of the earth rarely reaches it, the moisture which has been rolled into clouds, after being snatched from some distant sea, is speedily frozen. The swiftness of the freezing makes the mist into light, fluffy crystals of snow instead of ice. So snow is not frozen rain. Instead, it is crystallized moisture. And it only changes into rain on those warm days when, having begun to fall from some icy height, its path takes it through perilously warm air where it is melted and changed into rain before it strikes the ground.

No two snow crystals ever look alike. If on the hottest day in August, one looks up into the sky, one may find snow softly floating high above us in great filmy white clouds—and this is true even in the fierce heat of tropic climates.

But up north, where the winters are cold, the snow falls through air which is more than cool enough to preserve the shape of the delicate snowflakes. And, consequently, we in northern climates have all the joy of winter landscapes and tobogganing and sleigh rides.

Each little snowflake is six-sided, unless it has met with some misfortune en route on its journey to the earth. But no two are ever exactly alike. Thousands of snowflakes have been studied, but never have two identical lacy patterns been found.

Some of these fluttering, fragile crystals come from high up where it is terribly cold. Others were formed not far above the ground. Strange to say, by examining a single flake one can tell exactly where it came from.

If it is fluffy and light and like very fragile lace, then it came no great distance, and its parent storm is a local one.

If the flakes are more solid and shaped something like solid, six-sided cartwheels and tightly compact, then they came from a somewhat greater height.

But should they be formed like little collar buttons, engraved with exquisite designs, and quite firm and solid, then one may be pretty certain that they have traveled many miles through the air, and that their cloud parents are part of a storm of great size, sweeping over great areas of country.

But no matter where they come from or how long their journeys, each is a separate thing of beauty. So delicate are they very often, that when they are buffeted by the wind, their tiny points and wheels are sometimes bruised and battered until they fall as blunted granular particles called *sugar snow*.

The following extract is from the last portion of the unit describing mainly, the work of the weatherman.

The business of being a prophet of any sort—even that of being a modern weather prophet—is not an altogether easy one. Although modern weather prophets are not without their conveniences, still we expect them to be more accurate than the ancient oracles who directed men's destinies in words of double meaning.

From the regular commercial telegraph system to the delicate instruments which measure the weight of the air and tell the speed of the wind, the weatherman has at hand the finest mechanical devices known to science, as well as all the wisdom gleaned by years of investigation and study.

The man in the weather office in the Federal Building in Milwaukee, is one of more than two hundred who are scattered all over the country. All of them cooperate with him. If it were not for their help, he would find it very difficult to make any forecasts whatever.

In the Federal Building office as in all weather bureau offices throughout the country, are many clicking, complicated instruments. Off to one side is the little telegraph ticker which plays so important a part in the weatherman's prophecies.

At exactly 7 o'clock, mornings and evenings, (according to Milwaukee clocks) every weatherman, from Alaska to Texas and from Cuba to Puget Sound, sits at his telegraph table to send and receive messages from his colleagues. Each tells the other how cold or how warm it is in his territory, whether the sky looks threatening, and how swiftly and in which direction the wind blows. So by 8 o'clock Mr. Weatherman knows whether snow fell on Pike's Peak during the night and how warm it was in Florida. As the news comes clicking over the wire, one of the men in the office records the figures on a large map in the proper places. Later, this map is studied, the temperatures here and there noted, the direction of the cross-country winds are observed, and the speed of the air currents are computed. From all of this information the weatherman makes his prophecy, and, like the Greek Argonauts of old, who waited for the favorable word of the Delphic oracle before setting sail on their historic journeys, so today aeronauts, like Ruth Elder, Lindbergh, and others, are wise enough to heed his word—or, at any rate, that of his colleagues in the east.

The machines in the Milwaukee office are really more important to the weatherman in New York or in Washington than they are to us here. For, after all, they record only the present for us in Milwaukee, and tell us nothing of tomorrow; but they do help other weathermen to foretell what the morrow will bring to their districts.

In the office are also instruments that record on spools and graphs and charts what is being measured by the devices on the roof of the Federal Building. The office instruments are all connected electrically with the machines on the roof which measure the depth of the rainfall or the speed of the wind or the temperature. They are placed in the office for Mr. Weatherman's greater convenience, for a hundred times a day he is obliged to answer the telephone to tell some anxious nurse whether it is safe to take the baby for an airing, or to advise some club whether or not they may plan on a picnic next day, or to warn the boats on the lake of the coming of a storm.

But the real measuring instruments are on the roof, where the weather vane—not so very different from the weather vanes which our ancestors used these past centuries—is perched high on a pole to catch all the air currents. Only this modern weather vane sends little electric shocks to the office below where a delicate mechanism records on a bit of paper, wound on a spool, the direction of the wind during each minute of the day.

A description of the recording instruments is given to the students, followed by the conclusion that:

Sometimes, of course, the weatherman is mistaken. This happens occasionally when a storm, which looked as if it were coming toward Milwaukee, meets another storm and goes shooting off in another direction, or when something else occurs to change the general direction of the winds and the air current.

But usually the weatherman is right, and his predictions are becoming yearly more and more important.

Lessons may be illustrated in various ways. Fossil specimens from local beds have been collected and while they do not paint a complete picture, still they are visual evidence which gives the student an exciting personal realization of the actuality of antiquity.

Photostatic copies of charts and diagrams and photographs have been made from texts and other books. These make possible the use of countless sources which would otherwise be closed to classes at part-time vocational schools.

Lantern slides are always valuable and in some instances, they may visualize for the student, information that even motion pictures are unable to equal. On the other hand, motion pictures which have a local touch are not usually obtainable and so if illustrative materials of that nature are desired, they must be made. This is what was done in the Milwaukee Vocational School last year. Four films were made which had local settings. After use in several classes, I do not hesitate to say that the expense incurred in their manufacture was well paid for in student interest. Many valuable motion pictures may be rented from commercial firms at a nominal rental charge. We use films so frequently in our numerous classes that we have purchased a number of them. The purchase price was so low that the rental for one year would more than have paid it.

Many of the commercial films are extremely well made and are just as good as those that might be made with local settings, so far as educational value is concerned. We have films on snowflakes, bacteria and numerous ones on astronomy that could not very well be localized. Showing of these films increases the effectiveness of the lesson incredibly.

Aside from materials and equipment which actually enters into the presentation of a lesson, other items of interest make the science room become a place that the students like to go to rather than just an ordinary classroom. A good bulletin board covered with clippings which are of interest from the scientific viewpoint, will always be well patronized before class or for a few minutes after the class has adjourned. Mounted animals and birds, and dried and mounted insects will give continual pleasure if they are placed where they are easily seen. The most attractive bit of equipment that has yet been used in the beginning class here in Milwaukee, is the aquarium in which fish, insects and water plants are added to and changed from time to time.

An ant table is still an experiment. So far, the ants have not had sufficient time to multiply in great enough numbers to be of commanding interest.

If, by some ingenious means, we can contrive to lend to the cosmic forces of the universe, or to the laws and facts of life on this planet, a certain reality and significance for these students whom life has denied more luxurious and leisurely access to knowledge; if we can give, to even a few of them, a glimpse of the magic and wonder of natural forces, we shall have approached no mean goal. We shall have also, that single compensation of teaching—the belief that some minds are keener and some lives happier, because we influenced them through our contacts with them.

Reaching for the Moon

A Play for Manual Training and Vocational Classes, in Two Acts with Opening Speech

M. C. Richmond, Boys' Vocational School, Atlantic City, N. J.

CAST

Opening Speech by - - - -
MR. ROBERTS - - - - - -
MR. KENNEDY - - - - - -
Directors, The American Foundry Company
PAT RONAN, Office Boy - - - - - -
MR. MORTON - - - - - - -
MR. HAYES, Pres., A. F. Co. - - - -
TOASTMASTER - - - - - - -
DECORATOR - - - - - - - -
Workman, Guests, Waiters, etc.

SCENES

Opening Speech
(*Before Curtain*)
ACT I. File Room of Office, American Foundry Company.
ACT II. Banquet Hall of Giltmore Hotel, twelve years later.
(*Curtain will fall for a few moments during this act to denote the passing of a few hours.*)

COSTUME SUGGESTIONS

(*All characters*) *In the first act, everyday attire. In the second act, dark suit, white shirt, wing collar and black tie, to resemble evening attire.*

SCENERY SUGGESTIONS

In the first act, door to filing vault can be constructed of Upson board on wood frame and the whole painted black. In the second act, the table can be covered in such a manner that cloth just touches floor and nice effect is secured by this expanse of white across front of stage.

OPENING SPEECH
(*Before Curtain*)

Good evenin', folks!
Cheer up, the best is yet to come.
Confidentially speakin',
Take neither me nor the little play to follow,
Seriously.
You are here to be entertained;
We are here to entertain you.
The title of the play which follows
Is, "Reaching for the Moon,"
But really,
It has nothing to do with the moon at all.
Between you and me,
It's about a man and his work,
—We hope to make you laugh, too.
Ya know,
Man at his best
Is a funny creature,
And if there were no work in this world
There would be no fun in doing anything.
So, though serious of title,
Our play is for humor,
Of course not for humor alone,
But if you have laughs
Prepare to shed them now.
Man and his work
Are born into the world
Together.
This we can't deny.
In early years
When white man first touched these shores,
He who toiled not,
Did not partake of food.
So, today has the heritage
Descended upon us.
In a milder form
'Tis true,
Nevertheless,
No work,
No reward,
Whether it come from within,
Or in shape of pay envelope

From without,
Which speaks in accents
Not disconsolate as the wail of the ocean,
But gladdening
Like a bright Spring day.
Life is real!
Life is earnest!
Does not mean that our life
Is such a hard one,
But that there is to do
And we are the chosen people.
Not, "What shall we do?"
But "What can we do?"
Should be our query
As we take our places
Among the doers
Of this grand and glorious nation.
Taking stock, folks,
Is quite a difficult task,
But taking stock of your own capabilities
Is not only
Much harder,
But more essential.
We all like ourselves
Just a little bit,
And then again, too much.
Let us be cold and calculating;
Let us use a mental ruler.
What can we do?
Well, let's not reach for the moon.
It's right here, folks,
Look around,
You'll find it.

ACT ONE

Scene

File room of office, American Foundry Co. Doors to L and R of stage. To back center of stage, heavy door leading to Filing Vault. On this door combination knob is very prominent. Desk in center of stage to front; clothes tree to L corner; chairs.

(*Directions*)

(*As curtain rises, two men are seen on stage. They are directors of the company and are known as Mr. Roberts and Mr. Kennedy, respectively. Mr. Roberts is seated on front edge of desk and Mr. Kennedy appears to be somewhat worried and is walking about, hands in pockets, head bent.*)

Mr. Kennedy

(*Continues his pacing up and down for a few moments after rise of curtain, then stops and faces Mr. Roberts.*) I asked you to come down a little earlier this morning because I have something I want to talk over with you before certain employees come down.

Mr. Roberts

What's on your mind?

Mr. Kennedy

It's just this. That relative of yours who is in charge of this file room is practically in the same place he was when he came with us eight years ago. You know that we use the file room as a stepping stone to higher positions in our organization, and this boy—I should say man, now—has shown absolutely no progress, but goes about his work like a machine, doing what is asked of him and never thinking out anything for himself. I do believe he isn't interested in what he is doing. I hesitated speaking to you about this, knowing that he is a relative of yours, but I also know that besides having the good of this fellow at heart, you are loyal to the company. You know we can get a boy to do his work and for one-third the money we are paying him.

Mr. Roberts

(*Musingly.*) What you say is no news to me. I have observed the very things you speak of and it has troubled me. The young man's mother is living on a very meager income and I have not known just what to do. Perhaps a change to some different line of work in our company would work wonders. (*He stands up.*)

Mr. Kennedy

(*Puts hand on shoulder of Mr. Roberts and while they proceed to L exit, he says.*) You know we can't experiment with workers, especially with one who has been a failure in one line. Suppose we think it over. (*They pass out L.*)

(*Enter R, Patrick Ronan, the Office Boy, newspaper held high before his face, he whistles as he supposedly reads to himself.*)

Pat

(*Still holding his paper before his face, he seats himself in chair behind desk, stops whistling and then reads headlines aloud, as follows:*) The Discovery of King Tut Starts New Styles in Ladies' Dresses. (*Comments*) Believe me, I'm glad I'm not married. (*Reads*) Henry Ford to Make Tin Cottages So That His Employees May Spend Their Vacations in the Country. (*Comments*) What that man doesn't think of! Pretty soon everything formerly labeled, "Made in U. S. A.," will have marked, "Made by Henry Ford." (*Reads*) Bootlegging Practiced Even Before Prohibition. (*Comments*) What do you think of that? They're even tracing the history of *that* noble occupation. (*Reads*) Yankee Stadium Holds Record Crowd. (*Comments*) That's more in my style. Let's see what it says.

(*Enter L very quietly, Mr. Morton, the File Clerk. He puts his hat on clothes tree, goes behind Office Boy, grabs paper on either side and pulls it out of Office Boy's hands. Office Boy jumps up very much surprised.*)

Mr. Morton

Since when do you get paid for reading newspapers in the file room?

Pat

(*Apologetically.*) I was only picking out those items of news in which I thought you might be interested. —— You won't tell the boss, will you, Mr. Morton? You know, I like this place and I wouldn't care about looking around for another.

Mr. Morton

(*Sinks dejectedly into chair.*) You like this place, Pat? That's more than I can say.

Pat

Well, why don't you go somewhere else?

Mr. Morton

I don't know . . . . I've only had a clerical training. When I graduated from grammar school, I wanted

to study construction work of some sort, but my parents wouldn't even let me think of it. I was sent to a business school instead. They wanted me to be a big business man. When I wanted to be studying the principles of good building, I was studying filing, penmanship and a host of other things in which I had only a minor interest. Of course I made out fairly well, but I know I could have done better in the other work.

PAT

That's tough, Mr. Morton. It's something like the girl that waits on me at the Hartford Lunch. She says that her mind is on higher things and that some day she'll surprise the world. —— What are you going to do about it, Mr. Morton?

MR. MORTON

I really don't know. I understand the building of these railroad guns this company has been turning out and I've thought of putting in an application for the mechanical department, but as soon as I mention it at home, my people go into a tantrum, so, in order to keep peace in the family, I've let the matter alone. —— Well, there's no use crying over that. Guess I'll get busy. (*Lifts himself slowly out of chair, goes over to vault and turns combination knob.*)

PAT

(*Still lingering.*) I don't think you'll tell on me, will you?

MR. MORTON

Not on your life. You'd better run along now.

PAT

I want to see you open that door. (*As he says this, Mr. Morton gives combination a final twirl and then opens door.*) Boy! you sure do that easy.

MR. MORTON

(*He turns about, seems grateful for the appreciation and answers enthusiastically:*) Yes, that's the easiest and most interesting thing I do around here. That door is like a human being to me. It seems as if it can speak. I understand every nut and bolt in its construction. The directors of this company think that because the present combination is set and working on a time arrangement, that that's all there is to it and that it will only be ready for opening at a certain time. But I have a method whereby the combination can be changed just in the manipulation of the wheel and the time arrangement will amount to nothing. Besides, I can open it from either side.

PAT

Oh, boy! A regular Jimmy Valentine. You're losing time around here. I'd cash in on that information if I were you. —— Well, I guess I'd better be going. (*Proceeds toward R.*) So long! Thanks for the exhibition and for not telling on me. (*Exit R.*)

(*Mr. Morton enters vault and immediately comes out with large book which he places on desk. He sits down, opens book and studies it for a few moments. He gets up again and disappears into vault. In meanwhile, Office Boy tip-toes in softly from R., goes to vault door and while he closes it very slowly, he says:*) This guy thinks he's clever. I'll close this door and we'll see if he can get out. I've seen these smart Alecks before. (*He closes door.*)

MR. MORTON

(*Muffled shout from within*) Hey, open that door! (*Pause.*) My heavens! it's locked. Who did this fool trick?

PAT

(*Thoroughly scared*) I did it. I thought you said you could get out from the inside.

MR. MORTON

(*Raging*) You little fool! You've locked me in here and pretty soon the air will be exhausted. Run for help!

PAT

(*Very much scared*) Maybe he means it, I'd better get the boss. Oh boy! here's where I lose my job. (*He rushes out L. In meantime knocking is heard on inside of vault door. Very quickly L, Mr. Kennedy, Mr. Roberts, workman attired in unionalls carrying tools, Office Boy bringing up rear.*)

MR. ROBERTS

(*At door of vault*) Are you there, Morton?

MR. MORTON

(*Muffled voice*) Yes! Yes!

MR. KENNEDY

Hold on a while longer. We're going to drill the combination and then we'll break open the door.

MR. MORTON

Don't do that. I'll soon have it open from the inside.

MR. ROBERTS

What can he mean? Open it himself? But how?

PAT

He told me he could open it from the inside, so I locked him in to see if he was fooling. I didn't mean to do any harm. Gee, I hope nothing happens.

MR. KENNEDY

You certainly are one bright . . . . . .

(*Door opens and Mr. Morton staggers out. He is grabbed on both sides by those standing about and assisted to chair behind desk.*)

MR. ROBERTS

How did you do it? It's wonderful! Just think, he has saved his own life.

MR. KENNEDY

Give him a chance to get his wind. (*To Office Boy*) You may go now, Pat. I'll see you in my office later.

(*Office Boy passes out R, hands in pockets, head bent.*)

(*To workman*) You can go back to the shop. You can see there isn't much need for you here now. (*Exit workman L.*)

(*Mr. Morton gradually comes to.*)

Well, Mr. Morton, are you composed enough to tell us how you made such a remarkable escape from the vault?

MR. MORTON

(*Slowly at first*) There isn't much to tell. I've always been interested in mechanical things and that door has always been an object of great interest to me and in my slack moments I have studied it carefully and tried to realize its possibilities. So you see this opening of the door from the inside did not come on the spur of the moment, but is the result of long

study on my part of something which has always had a great attraction for me.

MR. ROBERTS

(*Turning to Mr. Kennedy*) You hear that! (*To Mr. Morton*) Do you know, Morton, I've always had an idea that there was a lot of good in you and it puzzled me why it didn't come out. How about a change of occupation in this company?

MR. KENNEDY

Let him call at the office later. I'm sure we'll have some interesting news for him. (*He passes out L.*)

MR. ROBERTS

(*Shakes Mr. Morton's hand and says:*) Congratulations, Morton. This will be a big thing for you. Don't forget your visit to the office. (*Exit L.*)

MR. MORTON

(*Stands up, puts hands into pockets and paces up and down.*) Well, the big chance of my life has come at last. Today marks the cutting of my mother's apron strings. And just think, all through an accident.

(*Office Boy looks in at R.*)

PAT

(*Sadly*) Say, Mr. Morton, I've just been fired. (*Walks to center of stage.*) I'm awfully sorry for what I did. —— You know, I hear you are to be made head of one of the mechanical departments. Some job!

MR. MORTON

You don't have to be sorry. You've done me a big favor and if I am appointed to one of the departments, you will be my chief office boy. How's that?

PAT

That's perfect, Mr. Morton! (*Quickly takes bag of candy from pocket and offering it to Mr. Morton, says:*) Here, Mr. Morton, have a piece of my favorite confection.

Quick Curtain

ACT TWO

(*Twelve Years Later*)

SCENE

Banquet Hall of the Giltmore Hotel. It is five o'clock in the afternoon and a banquet is to take place in this room at eight o'clock. Across the front of the stage there is a long table composed of wide boards laid upon wooden horses. It extends from one side of the proscenium arch to the other. At this time this table is devoid of all covering. The chairs are grouped together to L of stage. Everything looks in a process of preparation for the evening's affair.

(*Directions*)

(*As curtain rises, man is seen on ladder to back center of stage, about to hang flag on back wall. Pat, the former office boy, stands off to L and is supervising job of decoration.*)

PAT

No, no. Not there. A little more to the right. That's it. That's better. Ya know, ya want to fix this place up classy. Understand?

DECORATOR

(*Turning about on ladder*) Say, what's the idea? This isn't the first time I've decorated this hall for a banquet.

PAT

Sure, I know. But this is something especially special.

DECORATOR

Especially special! That's a new one on me. What's so especially special about it?

PAT

This affair's for my boss, Mr. Morton, who has just been elected to the presidency of the American Foundry Co. Besides he's been with the company twenty years and we're celebrating with a testimonial dinner here this evening.

DECORATOR

Ohhhhhhhh! Your boss; That is something special. I'll have to fix him up.

PAT

Now you're talking. I can see you're a man of great understanding. Here, have a cigar.

DECORATOR

(*Takes it and smells it*) What a shock! It's really a good cigar. —— I understand you much better now. (*He pockets cigar and resumes work.*)

PAT

I knew that would help. —— I hardly think the rest of the decorations will take you very much longer. The waiters will soon be in to fix the tables and I guess *we* ought to be set by six bells. (*Exit R.*)

DECORATOR

(*Looking after him*) I guess *we* ought to be set. Where does he get that "We" stuff!

(*Curtain is lowered for a few minutes to denote the passing of a few hours. When curtain rises again the banquet hall is fully decorated and the people are seated in their places as follows: Center, Toastmaster; to his R, retiring president of company, Mr. Hayes; to his L, Mr. Morton; Mr. Kennedy to R of Mr. Hayes; Mr. Roberts to L of Mr. Morton; Pat, the last chair to R of stage; three or four others at table. After curtain has risen, Toastmaster rises to speak. The rattle of dishes is heard and he looks in direction of disturbance, off R, with annoyed expression. Pat, exits R to put stop to noise. It stops and Pat returns to seat.*)

TOASTMASTER

Lad - - - - ees and gentle - - - - men! I have been greatly honored this evening by having conferred upon me the role of toastmaster at this momentous of momentous occasions.

When the directors of this company asked me to act in this capacity this evening, I pleaded that I be excused since I had in mind that I had an important engagement to address The Three Mile Limit Society the latter part of this week and I wanted to be in the best possible shape for this big event. However, I must say that when I heard that this affair was to be given in honor of our most estimable citizen, Mr. William H. Morton, (*Applause*) all thoughts of the other engagement left my mind and - - - - well, here I am. (*More applause.*) Now I fear I have taken up too much of your time talking about myself, (*cries of,* 'Not at all, not at all.') —— thank you, thank you—so I shall immediately proceed to introduce the speakers of the evening.

It gives me great pleasure to introduce as the first speaker of the evening, the Honorable Timothy F. Hayes, retiring president of the company and through whose graciousness we find ourselves in this splendid Giltmore Hotel this evening. Lad--ees and gentle--men, Mr. Hayes! (*Extended applause.*)

MR. HAYES

(*He rises slowly with paper in his hand.*) Mr. Toastmaster, fellow workers of the A. F. Co., and friends! (*Toastmaster is seated.*) I am here this evening to illustrate by living example that the ancient axiom about the shortest distance between two points being a straight line, is the truth and nothing but the truth. At the same time I am here to do honor to one to whom honor is due, Mr. Morton, newly elected president of the A. F. Co. (*Applause.*)

Friends, most of you know how I hate publicity and how distasteful it is to me to attend the general run of banquets. But this evening I have cast all thoughts of self aside and if I must brave the rigors of a banquet to no one is this sacrifice more due than to Bill Morton. (*More applause.*)

Now for the story. You will pardon me, friends, if I refer to my notes. (*He adjusts nose glasses which he takes from vest pocket, and takes up paper to read.*)

The story I am going to tell you is the story of Bill Morton. It might be the story of any man placed on earth to do a special thing and who finds himself waylaid in the mail, so to speak, at the beginning of his life's journey.

Mr. Morton came to us twenty years ago and through the kindness of a relative, secured a position in the office. Ladies and gentlemen, he might still be polishing the chair in the file room were it not for a slight accident and his iron determination to get ahead. (*Applause.*)

His fond mother, and this might be the story of any devoted mother, wanted him to be in such a position in which he finds himself at present, but friends, she chose the wrong road. Here was a mechanical genius wasting the best years of his life in the file room of an office, doing a work for which he was unfitted and in which he had no interest, and to think that he might still be occupying such a position! Call it fate or whatever you will, Mr. Morton gravitated to his natural calling and today we find him in a position of trust and as our honorable toastmaster has said, he is one of our most estimable citizens. (*Applause.*)

May this be a lesson to all mothers who are reaching for the moon,—thinking that it may not be as far off as they imagine, and that starting their boy on the right road will make it possible for him to reach his destination in the shortest possible time. (*Puts down paper and takes off glasses.*)

Friends, it gives me great pleasure to be here this evening at this dinner given by a successful company to a successful official and I can only say in this hour of happiness and prosperity that starting January first, increases in salary and bonus will be given to all faithful employees of this company. (*He sits down amid much applause.*)

TOASTMASTER

I guess that won't make any of you cry. I can only say, Mr. Hayes, that I am sorry I am not working for your company.——Lad--ees and gentle--men, Mr. Morton doesn't know it, but I'm going to call on him for a few words. (*Heavy applause.*)

MR. MORTON

(*He objects, but finally consenting, he rises to speak.*) Friends, I really don't know what to say, and then again, I might go on and talk for hours. I am really overcome with the occasion, but I must say that if any success has come to me, that I was started on the right road by our present secretary of the company, Mr. Patrick Ronan, and I am sure he is deserving of a large share of the honors you have heaped upon me. However, I want to thank all of you for the splendid reception of this evening and may the lesson which Mr. Hayes has spoken of, be taken to heart and who knows but that there may be many similar cases to my own and that hidden in the various corners of our large building there may be future presidents aplenty. (*Heavy applause.*)

TOASTMASTER

(*Rising.*) Mr. Morton has spoken of the part which Mr. Ronan has played in his march to success and it gives me great pleasure at this time to relinquish the floor to Mr. Patrick Ronan.

(*Much applause is heard; Pat rises in a somewhat confused manner.*)

PAT

(*Starts off shaky, but soon hits his stride.*) Really folks, this is unexpected. I find myself in the same predicament as a man I once knew. If you'll pardon it, I'll tell you a story.

'There was once a colored preacher who announced from his pulpit that he would tell a story about Daniel in the fiery furnace. He was interrupted twice by one of the members of the congregation who reminded the preacher that Daniel was never in a fiery furnace, but in a den of lions. The preacher answered, 'I don't care where he was, I just know he was in a terrible fix.' (*Much laughter.*)

That's the way I feel, friends, at this moment. I'm not a speaker, you know that, and I have been reminded that a great part of the success due Mr. Morton was, to a certain extent, because of me. I can't say that that is true, but at the same time, if my little trick of twelve years back helped to put Mr. Morton on the right road, for whatever I have done I have been amply rewarded and I want to say that if there are finer men than the officials of the A. F. Co., I'd like to know where they are. (*Heavy applause.*)

TOASTMASTER

(*Rising.*) The hour is getting late and tomorrow is another day—let us ——

PAT

(*Jumping up quickly.*) How about a 'Jolly Good Fellow' for Bill Morton?

(*All rise and join in singing* 'For He's a Jolly Good Fellow,' *curtain descending shortly after beginning of song.*)

New "Dimension" Design

C. A. Kunou, Supervisor Manual Education, Los Angeles, Calif.

(See Supplements 139, 140, and others in succeeding issues of the Industrial-Arts Magazine)

THIS outline of some of the important facts in modernistic design is made and presented from the standpoint of a structural designer and school supervisor, rather than from the standpoint of an artist. The problems illustrated and the designs worked out are intended primarily for the schools and for the home.

It can hardly be denied that for a quarter of a century or more there has been scarcely any effort toward new designs for construction work in the schools. The work of the schools during this time has been a continuous reproduction of the period styles of the past. Manual training and industrial arts in the schools should break with the dead past, and adopt and follow the trend of this new, practical, interesting, and dynamique way of expressing structural art in this fast-moving age.

The designs shown in the accompanying illustrations are worked out along the lines of modernistic interpretations. Length, width, and thickness are the three dimensions embodied in structural designs. Other dimensions may be that of time and space. Designs embodying these dimensions are made in the spirit of the present, which among other things, includes the utilization of the space found in apartments and skyscraper dwellings, to the best advantage.

The motives for these designs are conventionalized to conform to the present styles of construction and finish. School products ought to embody the present trend of American building construction. This new trend in treatment of line and mass emphasizes beauty through proportion, simplicity, order and law, and discards the decrees of the old art styles. The objects presented illustrate attempts to interpret structural design in terms of the present, uninfluenced by period styles of the past.

The term, new dimension design, seems more appropriate than the term modernistic design, for this design is modern to this century only, as older designs were modern to preceding centuries and became styles in those periods. It is, therefore, not so much modernistic as it is an expression of what ought to be, and is, the style of the present. Insofar as smaller structural designs of this character are concerned, it is an outgrowth of American architecture and takes impulses from that source in order to reveal and interpret democracy, that is to say, it is a design for everybody. The elaborate and time consuming craftsman pieces of yore, do not fit in the scheme of society in motion. The new style of design is trenchant because it does not depend upon precedent, but it is fundamental in line and mass. It does not entirely discard old forms, but *modernizes and utilizes them in new combinations and applications.*

Combination Furniture

Why combination of uses in structure? Because modern urban life does not require nor permit a large amount of furniture with each piece designed for one particular purpose. The combination of uses saves space, increases efficiency and comfort, concentrates on a few and effective things, and decreases the cost of living and simplifies it.

Terra-Cotta Jars and Wood Vases

Why terra-cotta jars? The terra-cotta or burnt-clay jars modernistically designed are inexpensive and artistic in their simplicity. They may be decorated with simple ornaments and finished in bronzes or colored enamel to harmonize with any surroundings, and they may be made to match modern furniture and decorative schemes. They also may be made impervious by coating the inside with pitch to hold water for natural flowers. But, since artificial flowers require no water, jars and vases of other materials may be made. Wood vases, for instance, may be found both practical and appropriate.

The delightful thing about new dimension design is that in working with it new relations, new uses, and new modifications are revealed.

New Terms

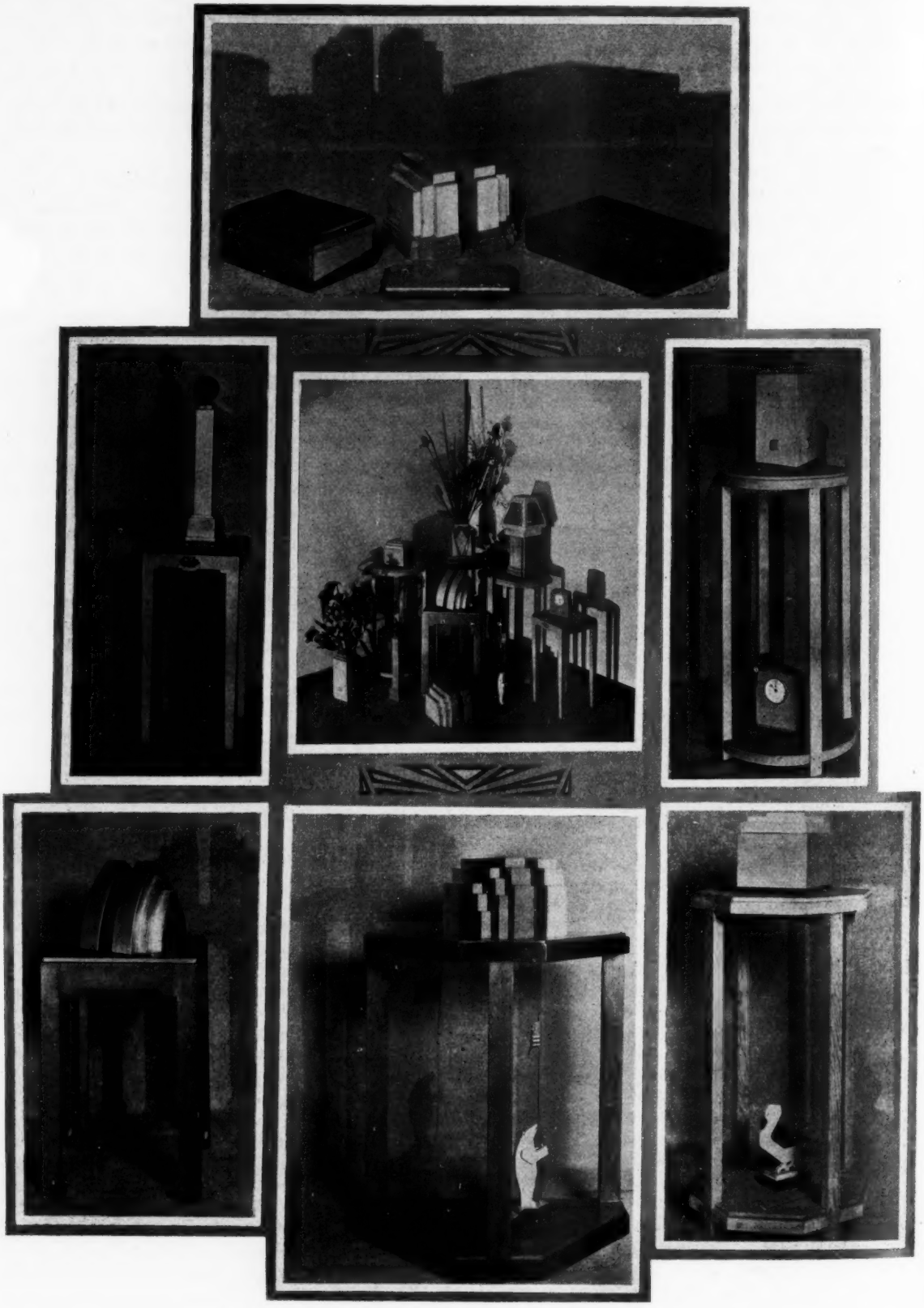
The modernistic design movement has called forth terms and words little used or known up to the present time. To illustrate, the term *Modinar* is used in catalogs to designate a modernistically designed and heavily upholstered chair, comfort not being sacrificed to gain modernistic interpretations in the design.

Dynamique is another term not hitherto used in furniture design and manufacture. This term probably signifies the tendency to use somewhat extreme varicolored fabrics with bold and sometimes bizarre effects in furniture design and interior decoration, and with a direct touch of the unusual.

New dimension design, is a term used to signify modernistic adaptability and conservation of space in dwellings, furniture, etc., and outlines which harmonize with American architecture of the present. In other words, new dimension design may signify the interpretation and application of the elements of time and space in addition to the three dimensions of length, breadth, and heighth, which were the only elements of design in art periods of the past. New dimension design also embodies the desired qualifications of comfort, beauty and serviceability in conformity with present social and economic conditions.

The set-back panel effects of new dimension or *modernique* structural design echo the architecture of today with its elegance of line and massive character in structure. The grotesque and the distorted are not necessarily modern art design, for the modern movement in design is a sympathetic cooperation of artists and industry, both working together.

Le Fini Moderne is another term much in vogue and used by manufacturers in their descriptive catalogs. This is a French term meaning the modern finish. It denotes all kinds of quick and rapid setting finishes, such as lacquers, quick-drying varnishes, enamels, bronzes, etc.



NEW "DIMENSION" PROJECTS MADE IN THE LOS ANGELES SCHOOLS,
C. A. Kunou, Supervisor of Manual Training, Los Angeles, Calif.

It is necessary to study these terms to understand and determine their exact meaning and use in modern art and industry.

What New Dimension Design Really Is

The author here presents what he understands to be the right idea of modernistic structural design.

Modernistic or new dimension design is not *cubism* and it is not *mission style*. So far as the author understands cubism, it is a representation of objects in their inner make-up, which according to this school of artists, is supposed to be of cube formation and motion. Mission style, which had its origin some years ago, was a protest against the old classic elaborate art styles and resulted in a return to a primitive and affected simplicity.

Modernistic design as it is being unfolded in America is more than a protest against old and inapplicable period styles. It is an expression of the spiritual apprehension of the things of this age. The domineering perpendicular lines of modernistic design have dignity in simplicity, and when broken give a sense of action. The angular and set-back effects serve to give strength to the structure.

Color in this design is expressed mainly in related masses and not in points.

Construction

The construction of the objects shown by the accompanying illustrations, is simple and calculated to be within the ability of the average elementary and junior-high-school pupil. The objects are graded and are suitable for pupils from grade 5 and up. The construction is also adaptable to home industry. However, it is standard construction, simplified and systematized. The processes are related and follow one upon the other in sequence, and are graded as to difficulty of performance.

The construction processes involved are mainly halving and housing. The process of lamination—piece upon piece—applied in the entire group results in pleasing set-back effects.

In order that the wood vases may stand more securely and not overturn with the weight of artificial flowers, the bottom of the vases should be weighted as shown in the sketch. The process, an easy one, is as follows:

A false bottom is nailed onto the inside of the vase, about 1½ inches from the bottom edge, depending upon the size of the vase. This space is filled with a cement block made of a mixture of about one part of cement to about three parts ordinary plasterer's sand and cast in a mold to fit inside the bottom of the vase. The cement block must be dry before it is put into place, because if it is it might soak the vase and warp its sides. The cement block is leveled and evened with the edges of the sides, and the outside bottom is nailed over it completing the construction of the vase.

Assembling

The assembling processes of the objects in this group consist mainly of gluing and nailing, covering the nail holes with suitable putty materials made with diluted glue and fine sawdust of the woods used.

For higher classes of work more elaborate construction and assembling is, of course necessary, but the construction and assembling processes involved in the pieces shown herewith, are suitable for the various grades in the elementary, junior and senior high schools, and also for homework.

Materials

In the group of objects here presented, redwood and white pine or gum wood and white pine have been interchangeably and decoratively used to obtain pleasing and related color effects. In other words, the woods are used in a decorative manner.

Finishes

1. *Hard Finish.* Give two coats of white shellac. Let dry. Sand. Give one coat flat varnish.
2. *Bronze Finish.* (Gold and silver.) Give one coat thin glue size. Let dry and sand. Give one coat of whiting body. Let dry and sand. Give one coat red burnish clay. Let dry and give one or two coats bronze, mixed in transparent cellulose lacquer, or bronzing liquid on oil-varnish base.
3. *Enamel Finish.* Give one coat flat paint tinted to agree with the colored enamel to be used later. Let dry and sand. Give one coat tinted enamel. Let dry. Give outstanding features a coat of shaded enamel to obtain pleasing related effects in the color scheme desired.
4. *Lacquer Finish.* Sand surface well. Give one coat of white undercoat, grayed to neutral. Let dry and sand. Give second coat. Let dry and sand. Brush on coat of colored lacquer tinted with white lacquer. Let dry. Give second coat of colored lacquer shaded in dark to obtain desired color scheme. For thinning undercoat, use turpentine, not oil nor lacquer thinner.

Most of the drawings presented in this article show possibilities of modernistic design for furniture and other articles made of wood. A few illustrations show attempts in modernistic design for objects made of other materials, such as lamp shades and lanterns constructed of heavy paper, cardboard, and parchmentized materials.

While no definite instructions or designs for artificial flowers are presented in this article, attention is directed to this important part of manual-education work for schools and home.

Impetus and inspiration to efforts along the lines of modernistic design and construction work may be gained when it is realized that a new school of carpentry, cabinetmaking and metal craft work is being evolved in this part of the present century. This includes, of course, also the use of new kinds of woods and exotic materials.

WORK MADE BY STUDENTS UNDER THE DIRECTION OF PROF. W. H. VARNUM, IN THE COURSE OF APPLIED ARTS AT THE UNIVERSITY OF WISCONSIN

INDUSTRIAL-ARTS MAGAZINE

EDITORS

E. J. Lake *J. J. Metz* *S. J. Vaughn*

RECOGNITION OF GOOD CRAFTSMANSHIP

Various architectural societies and building-trades organizations have become interested in recent years in giving recognition to good craftsmanship in the field of building construction. In Philadelphia and other cities, an annual award is made to men who have distinguished themselves by some especially fine piece of work, or by long and honorable service in the trade. The awards consist usually of medals and certificates, presented at a public gathering of architects, building contractors, and members of the trades. The idea has been borrowed from a practice of many years' standing in Great Britain and continental countries where the honors are much sought and highly appreciated.

It has seemed to us that vocational and trade schools might well take an interest in awards for craftsmanship and might render a considerable service to the local community in furthering the idea. The underlying purpose of such awards is not different from the objectives of trade and vocational schools. Primarily, the recipient of an award is honored and is given a tangible reward for his work, his devotion to the trade, and his superior skill and knowledge. The craft, and to a certain extent, the community express publicly their appreciation and provide the good craftsman with a form of satisfaction which cannot be derived from the pay envelope, or even from the private praise of his employer and fellow workmen. Indirectly the trade honors itself by showing its concern for upholding the qualities of workmanship and materials, personal integrity and devotion to the trade, and direct service to its patrons and to the community. All these purposes are involved in the immediate objectives of vocational education, which are concerned with the personal knowledge, skill, and attitudes of students as prospective journeymen mechanics.

In every community the vocational school as such might very well take up the matter with local groups like the chapters of the American Institute of Architects, the trade unions, and the craftsmen groups. Where the groups do not take kindly to the idea and assist by means of committees and awards, the school may quite properly act as an independent agent. If colleges and universities honor statesmen, scientists, and professional leaders by conferring upon them honorary scholastic degrees, why should not the vocational school confer certificates of honor upon craftsmen with equal propriety and dignity?

Whether the trade and technical groups cooperate or not, certainly the school auditorium ought to be opened for exercises, at which the awards are made, and the student body ought to be required to attend as a major school exercise.

Such exercises and such awards would undoubtedly have a strong educational influence upon boys and girls who are enrolled in trade and vocational schools, and who are taking shop courses leading to a trade. We know of no better way of impressing boys, not only with the value of the trade which they are about to enter, but with the dignity of work and the essential necessity of good craftsmanship.

TIMELY ADVICE

The following timely instructions have been taken from the bulletin of the manual-arts department, issued by J. I. Sowers, director of vocational education, Miami, Florida. The instructions which Mr. Sowers gives his teachers may well be followed by shop teachers in any school system.

Closing Directions

1. Fill out duplicate inventory blanks. One is to be tacked on the inside of your tool cupboard, or toolroom, the other to be returned to the office.
2. Take tools apart, clean, sand off rust if necessary, and oil to prevent rust.
3. Do not leave any unfinished projects about the shops. If such exist, discard them or take them apart and return the material to stock.
4. Clean all brushes, wrap them up and store them away carefully.
5. Oil the power machines to prevent them from rusting during the summer.
6. Return the folio of blue prints to the office. New blue prints will be sent out next year to replace those that show signs of use; some of those you now have will be discarded, and new models will be added for next year's folio.
7. Tag your keys and return them to the office.
8. Get all saws sharpened. To do this, pack the saws in a box and nail it up securely. On the inside of the box tack an inventory of the saws contained in the box, and name of the school from which they come. On the outside of the box, mark in bold letters: "Saws from ———— School." Leave the box in the shop where it can be taken up by the school truck. Saws will be collected the week after schools close.
9. The spirit in which to clean up your shop at the end of the year should be this: "Maybe I will not be back in *this* shop next year. If I do not come back I am going to leave the shop as I would like to find it were I the *new* teacher." If a new teacher came into your shop next year, would he look around at the condition of your tools, and the manner in which you left things and say: "Well, they surely had a *good* man here last year."

THE ANNUAL EXHIBIT

The value of the annual exhibit can hardly be overestimated. If it is properly conducted, it sells the industrial arts to the school system, to the home, to the community, and to industry. Without the annual exhibit little cognizance is given to the work of the industrial-arts department, even by the fellow faculty members of the industrial-arts teacher. The pupils and the home may know something of the work, but the rest of the community hardly realizes what goes on.

The annual exhibit frequently is the only publicity given to the industrial-arts department throughout the

year. It is therefore quite proper that the annual exhibit should be prepared with a great deal of care and forethought because if the exhibit is prepared with some idea of display values, the visitor cannot help but be impressed with the kind of work that is being done in the schools.

Have you ever attended an exhibit where the decorations seem to crowd out the exhibit very much as some heavy, elaborate gilt frames seem to dwarf the pictures which they are to display?

Have you ever been at an exhibit where the individual pieces were crowded so closely together that the workmanship of the separate units were entirely lost?

Were you ever at an exhibit where quantity and numbers seemed to predominate over quality and workmanship?

Have you ever noticed that an exhibit can be given life by exhibiting one or more students actually engaged at their work?

If the annual exhibit is worth while, it is worth careful study.

THE PART-TIME SCHOOL

Legislatures in several states are again busy altering the laws which govern part-time vocational and continuation school education. Of course, these types of schools are in existence a comparatively small number of years, and it would be too much to expect that their inclusion in our general educational system would not arouse some antagonism. They have not been in existence long enough to be generally accepted and it is natural, therefore, that our legislators should try to make the laws governing them more and more acceptable to all concerned.

It seems, however, that some of these legislators would make a thorough study of the schools themselves and of their effect upon the social and economic lives of those who are affected by them, before they commence making changes in existing laws.

It is an accepted rule among art teachers that a line that has to be altered is not to be erased until the alteration has been made. This seems not to be the case with our lawmakers. Before a law has existed long enough to really get a sane trial, they are ready to annul it and make another law, the effect of which neither they nor anyone else can foretell.

Take for instance, the change in the part-time vocational school law proposed in one of our states, which would give to the judges of some courts the right to suspend the part-time vocational school law in the case of this or that child, because probably a destitute mother may be dependent upon the wages which that child earns.

If there is anything in the part-time vocational school or continuation school law to recommend it to the citizens of the United States, it is the fact that these schools are specially instituted for the underprivileged. We have high schools, colleges, and universities for those who can afford to attend them, and we must not forget that these schools of higher learning are paid for out of the taxes collected directly or indirectly from every one of us.

The duty of the part-time vocational school, however, is to give the finishing education to a very large majority of all the boys and girls between the ages of 14 and 18. At present many of these young people are excluded from the privileges of secondary and higher education because of the financial condition of their families. This handicap was to be at least partly removed by the part-time vocational school law, which was planned to assure the underprivileged to an appreciable extent of the equal opportunities for which we are striving in education.

Any attempt to rob anyone, even though he be the poorest and the most underprivileged, of the advantages offered by the part-time vocational school, nullifies the very reason for the existence of this type of school. It were better for the community to take care of a poor family rather than to rob a child of that family of its opportunity to take advantage of this last means of educating itself for its life's work.

Unfortunately, some of these legislators are of the politician type, where the word "politician" is used in its lowest sense; who either because of their ignorance of the value of this type of education or by their seeking for questionable advantages, are ready to experiment with something which so vitally affects the lives of the majority of our people and jeopardizes the opportunities of those who can least afford to lose any privilege which may have been granted to them.

It is only by vigilance and hard work that the friends of these schools can prevent some of these misguided men from severely crippling the laws under which these schools exist.

ARE WE IMPROVING?

The matter of art in industry is of increasing importance to the teacher of industrial arts, as art is of increasing importance in the use and marketing of industrial products.

Every boy or girl learning to work in the industries is a potential producer and consumer of the best selling goods on the market.

The best in quality is not always the best in appearance, but the best in quality and appearance is of course best of all. The American public is rapidly learning to discriminate as to appearance. We are inclined to believe that more goods are now sold on appearance than on quality. The persistent illustration of goods in advertising and the increase of goods display in retail trade, indicate that this is true. Many retail dealers who have prided themselves on selling "only the best line of goods to a high-class trade" are brought to the humiliating need of putting in a line of goods which looks just as well and sells at a lower price.

"Tasteful but not too expensive" is the description of a good selling line as stated by one trade journal. Cottons are now made as attractive as silks. Attractive designs are to be found in comparatively cheap goods, and these attractive designs are not for the most part gaudy or bizarre.

The industrial-art teacher must be up on art.

Equipment for Industrial Mechanics in New Cosmopolitan High Schools

Earl L. Bedell, Supervisor of Vocational Education, Detroit, Mich.

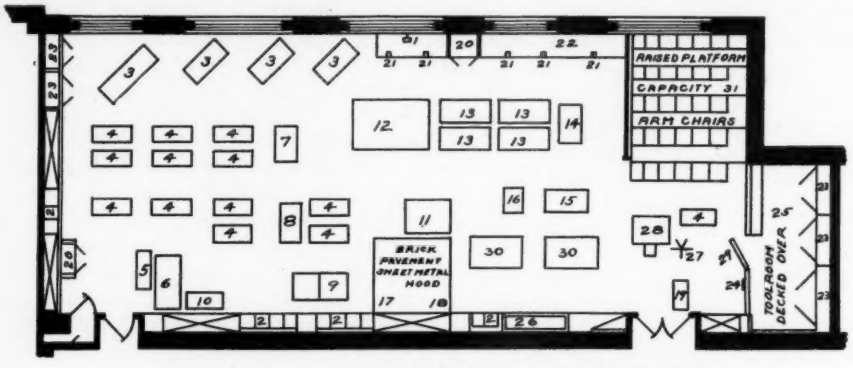
THE Cooley High School is the newest of Detroit's cosmopolitan high schools. It has been erected on a 13½-acre site in the northwest part of the city. It is of Spanish Renaissance design, with a buff face-brick exterior, trimmed with darker terra cotta. The first unit was completed at a cost of $760,000. It opened on September 4th with a capacity enrollment of 1,500 pupils. The enrollment can be increased to 2,500 when the second unit containing the gymnasium and pool is completed.

Provision has been made for teaching the industrial arts by providing a large general shop for industrial mechanics and two mechanical-drawing rooms. The principal equipment in the shop consists of:

1. A woodworking unit of 4 wood-turning lathes, 1 band saw, 1 hand planer, and 26 woodworkers' benches.

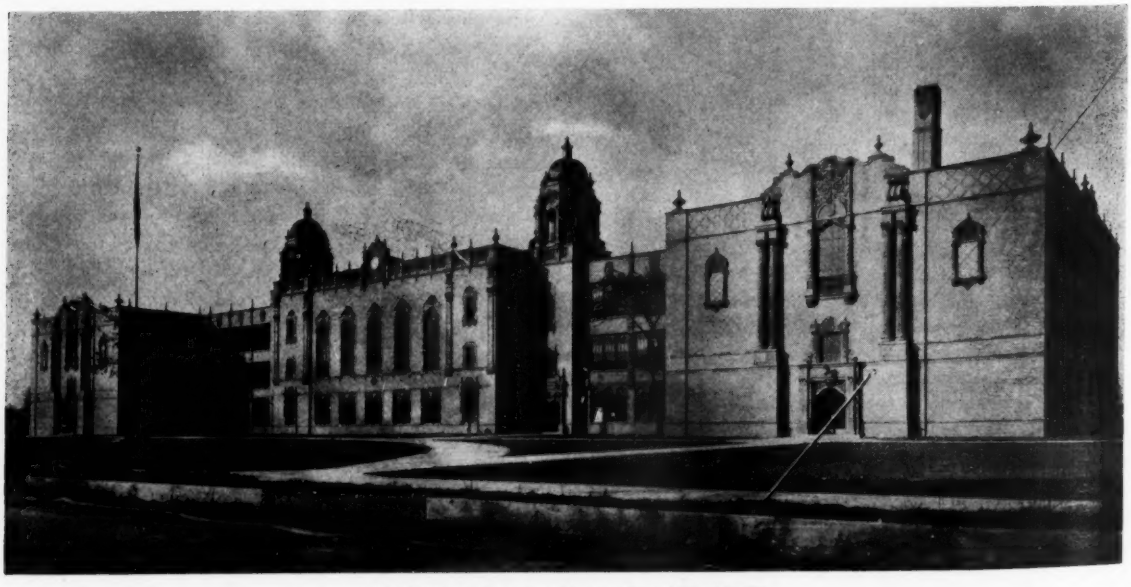
2. A metal-working unit of 4 engine lathes, 1 universal milling machine, 1 power hack saw, 1 drill press, 1 tool grinder, and a forming and folding machine together with stakes, soldering furnaces and miscellaneous sheet-metal tools. A forging and soft-metal melting furnace is placed under a large sheet-metal hood.

Especial attention has been given to health and safety features in designing this shop. A large exhaust fan operated independently of the ventilating system



GENERAL SHOP, COOLEY HIGH SCHOOL, DETROIT, MICH.

1. Electric Outlet
2. Lockers
3. Wood Lathes
4. Woodworking Benches
5. Jointer
6. Band Saw..
7. Oilstone Grinder
8. Squaring-Off Sheams
9. Molding Tub
10. Soldering Bench
11. Forming Machine
12. Milling Machine
13. Metal-Working Lathes
14. Hack Saw
15. Tool Grinder
16. Drill Press
17. Melting Pot
18. Tool Dressing Forge
19. Opaque Projector
20. Steel Cabinet
21. Vises
22. Wall Bench
23. Cupboards
24. Ladder
25. Toolroom
26. Wash Trough
27. Screen for Opaque Projector
28. Teacher's Desk
29. Dutch Door
30. Motor Stands



COOLEY HIGH SCHOOL, DETROIT, MICH.

of the rest of the building, removes all dust and odors from the shop. Every machine tool has an individual motor-drive, and every motor is controlled through an automatic over-load and under-voltage switch. The arrangement of the electrical controls makes it possible for the instructor to stop every machine in the shop by throwing one switch, after which each machine will have to be started individually by the operator. Thus the danger of a machine starting unexpectedly is entirely done away with.

The raised platform in one corner of the shop has armchairs in which the students are assembled for demonstrations and class lessons. An opaque projector is provided for throwing illustrative material on the screen directly in front of the class.

Individual steel lockers built into the walls of the room provide adequate storage space for the students' work. There are several standard classroom cases also built in. A toolroom provides ample space for small tools and the storage of supplies.

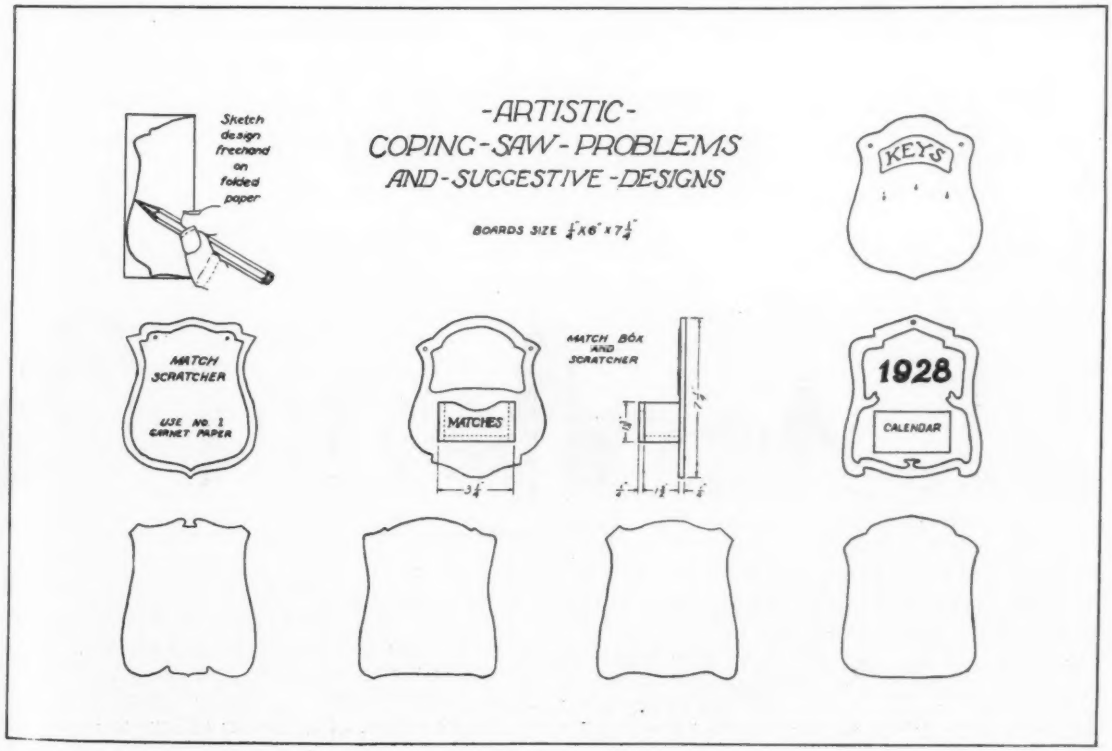
Related Drawing for Beginners' Woodwork

Martin W. Peterson, East High School, Youngstown, Ohio

OUR present-day industrial education demands that there be some related subject matter taught with each shop course. Since few schools have more than four or five shops for their prevocational students, we know that these shops are not representative of the 3,000 industrial and manufacturing occupations of the country. The nearest that our schools can get is to help the boy to choose between the broad fields of employment or groups of lines of employment. The schools select some few of the arts or trades that they can teach well, and build around them a fund of knowledge which is in some way or other manifested in other trades. One field of the woodworking trade is drawing. Drawing in turn is related to other trades. It is the purpose of this article to bring forth certain elementary correlating features of drawing with beginners' woodwork.

In analyzing the course of wood, and jotting down the many occasions where drawing is essential and necessary for a more complete knowledge, certain facts are outstanding. We find that boys need drawing in woodwork in order to:

1. Understand the teacher's blackboard sketches.
2. Understand magazine diagrams.
3. Find out by drawings how a thing should look when finished.
4. Determine exactly the dimensions of pieces which must be made.
5. Be able to make the teacher understand just what the student intends to do.
6. Make sketches showing different designs, so as to have a number to select from before determining which is to be used for a given project.
7. Provide an opportunity for a number of students to work on various separate parts of the same project.
8. Provide means for determining certain short cuts, as in cutting identical lengths, identical widths, similar joints, angles, and boring the same size holes in similar positions.



SUBMITTED BY MARTIN W. PETERSON, EAST HIGH SCHOOL, YOUNGSTOWN, OHIO

9. Offer a basis for the listing of the hardware and fixtures needed.
10. Notice and calculate how much space there is for certain things, as:
   a) Room for doors to swing.
   b) Space for design or stencil.
   c) Proper size of the project considering its use.
11. Provide a balance in size and shape of the various parts which go into the project.
12. Find out whether certain things will work, as:
   a) In shoe blacking stand,—free space for use of the rag;
   b) The size of drawers for a given cabinet;
   c) Room for neckties or towels on the rack; and
   d) Strength of a part in comparison to the stress to which it will be subjected.

These are more or less the objectives and purposes for a course of study in related drawing for beginning woodwork.

From the foregoing it can clearly be understood that there is much suggestive material which may be used as related subject matter for a woodworking course. By arranging this into teachable content in terms of both the art of drawing and the projects which are to be made, certain processes and principles of drawing are brought out. Thus we see the need of pencil technique, the ability to understand and sketch various views of objects, and to make sectional views of them. Certain constructions need to be pictured, and designs have to be placed on paper before they can be scrutinized for their adaptability to a certain object. The need of knowing something about mechanical-drawing operations and the technique employed by the draftsman, is at once apparent. These considerations open a field of processes which, when placed in teachable units similar to those used in the woodworking course itself, provide a related course that is very helpful to the beginning woodworker in our prevocational course.

To tie drawing up with the processes in woodwork, we can show on paper just how a butt joint will appear. We can lay out on paper showing where certain parts of a hole will fit. From the drawings we can tell just where to cut a kerf on a board, how deep to cut it and in what direction. Then too, drawings are a means of preserving information for further use. Throughout the analyses of processes we find means of showing by drawings where the various plane cuts are to be made, where the chisel is to be used, where to fasten the different pieces with nails, and where to use screws. Other processes, such as boring holes, cutting out designs, and such like information, can be also designated on drawings.

Woodwork and drawing can also be correlated by teaching two-view drawings just when saw cuts or plane cuts make it necessary to show how the cuts look on different sides of the boards. Drawing of designs should be emphasized when designs are required on projects that are being made. These designs may entail the development of a curve on one edge of a board, or of a complete series of curves as on the back of a match scratcher, or of a key rack. Again, three-view drawings should not be made until it is required to fit together two or more pieces of wood, as in the making of a broom holder. Each step in woodwork should require its corresponding related process in drawing.

A few other considerations that should enter into this correlation also should be considered.

Blue-print reading may go along with drawing after dimensioning has been taught. The making out of bills of material should then be taken up, and with this study the mathematics of woodwork may be combined. The correlation between drawing, mathematics, and woodwork, when handled in this way comes about in a natural and logical manner.

Perspective Drawing the Mother Tongue of the Graphic Languages

Frank W. Walsh, State Teachers College, Oshkosh, Wis.

PART I

MANY excellent articles have been written on "Drawing the Graphic Language," "Drawing as a Means of Expression," "Drawing as a Means of Shape Description," "Drawing, the Universal Language," and "Drawing, the Language of Industry." These aspects of drawing are the ones most commonly accepted by those who have made a thorough study of the subject.

The strange thing about the whole matter is that many of the beginners who are teaching the subject are slow in accepting these views. There seems to be a doubt in their minds that drawing is a means of expression; that it is an art which is simple to understand, and simple to teach, if the view is accepted that "drawing is the graphic language."

Let us assume that drawing is really a language. Then the question arises, how shall we teach this language? It can be taught the same way as any other language. Divide it into those parts that are already understood or spoken, and those that are not understood or are foreign to the student.

Perspective drawing, like the language which we use daily, (our mother tongue) is readily understood. Show Figure 1 to several hundred people of different ages and experiences, and you will find that it is

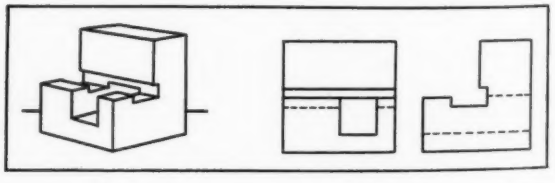


FIG. 1 FIG. 2

almost universally understood. Show Figure 2 to the same people, and you will find that it is understood only by those who are technically trained. Figure 2 represents the technical (orthographic) type of drawing and corresponds to a foreign language.

The aim then, of a teacher of languages, is to get the student to know and speak his own language and then, through this knowledge to acquire the foreign

language. In drawing, perspective drawing may be looked upon as student's own language, and orthographic drawing as a foreign language.

Before a student undertakes the study of a foreign language, it is best that he can express himself fluently in his own language. For this same reason a student of drawing should review or learn a little perspective drawing before attempting the study of the foreign language of orthographic projection.

The long word "perspective" may frighten many students, nevertheless, the first drawing that he ever made was a perspective drawing. He even attempted to make drawings of houses, barns, windmills, animals, etc., before he saw the inside of a schoolroom. It wasn't necessary to label all of them either. Later, in the third, fourth, or fifth grade, he was given training in perspective drawing from models.

The review may consist of practice in drawing from other perspective drawings, models, and later from written information. After this review, the student has the tools ready to express thoughts in his own language, that is, in perspective drawing.

The teacher now introduces him to the foreign language (orthographic drawing). Full explanation is carefully made regarding the rules to follow in reading or translating this language. The student is given simple orthographic drawings like simple sentences to read and he translates them into his own language; that is, he draws them in the form of a perspective sketch. The teacher looks at the sketch and makes corrections, the same as a teacher looks at a sentence or paragraph that has been translated from a foreign language.

After sufficient practice with this *reading* and *writing*, the student is given a perspective drawing, that is, *a sentence in his own language*, and he is asked to *write* or *translate* it into the foreign language (orthographic drawing). To become an expert interpreter or writer, practice is necessary in reading and writing. The same holds true for becoming efficient in reading or making drawings of the technical type.

We conclude that if *drawing is considered as a graphic language*, then *perspective drawing should be considered as our mother tongue or the language of the many*.

This article might serve as an introductory statement to students who are commencing the study of orthographic projections. According to present educational standards, the approach is pedagogically, logically, and psychologically correct. The student is led to proceed from the known to the unknown, and from the simple to the complex. His interest is sustained through his knowledge of what he is doing, and he is shown the relationships which exist between that which he already knows and that which he is to learn.

Article II will follow in an early issue of this MAGAZINE.

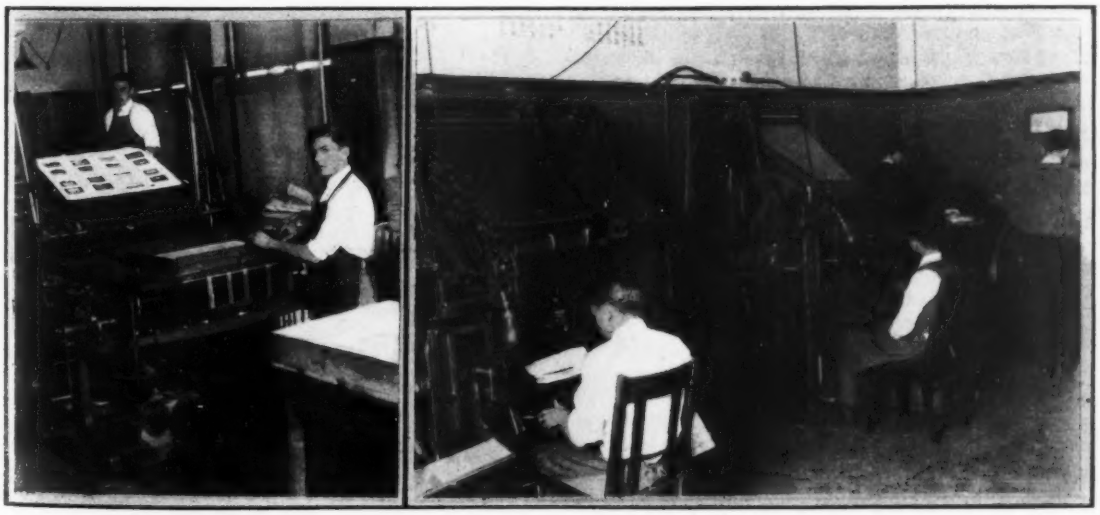
Vocational Printing in the High School

Charles L. Detrick, J. Sterling Morton High School, Cicero, Ill.

WHAT is the purpose of vocational education? This question may best be answered by quoting from a pamphlet called "Instruction in Printing in Public Schools," issued by the United Typothetae of America. This booklet says that vocational training is "the direct and purposeful teaching of the industry as a vocation. The purpose is to prepare the pupil for *wage earning* in the industry."

The making of an industrial wage earner out of a schoolboy is no small task, considering that the training must be done in less than six months of actual working time.

He should acquire the principles of straight composition in the prevocational course, or the so-called "finding course." These principles include:



VOCATIONAL PRINTING IN THE HIGH SCHOOL. CHAS. L. DETRICK, INSTRUCTOR

Learning the case
Adjusting the composing stick
Correct spacing
Emptying the stick
Proving composition
Reading proof
Distribution of type

These fundamentals should be taught by a series of exercises and demonstrations with one size of type. Everything possible should be done to make these lessons interesting. If a boy is interested, he will learn.

The vocational course in printing covers four semesters of work—three clock hours each day in the shop—a total of 1,200 hours. Correlated with the shopwork is shop mathematics, shop drawing, and English. The curriculum should be elastic enough to allow the student of printing to enter classes at any time during his first two years, and to enroll in such other classes as would enable him to earn college requirements.

Much of the student's time during the first semester of his vocational course should be given to book composition, in which he studies indentions, the use of capitals, small capitals and italics, punctuation, division of words, heads and subheads, make-up, and book and newspaper style. This opportunity may be secured by the publishing of a school newspaper which also trains in news writing and the preparation of copy.

The second semester is given to the study of type faces, type computation, tabular composition, and the introduction to display composition. It is the inclination of the student printer to overset rather than underset his display lines, so for that reason he should be started on window cards and posters, in which their display lines are limited only by the size of the sheet. This is a good time to emphasize stonework—the locking up of jobs for the platen and cylinder presses, special attention being given to the position and tension of the quoins.

In the third semester the most important phase of the work is taken up—that of job analysis. This idea in the teaching of trades was strongly stressed in the army schools, with varying degrees of success. The reason that printing was not taught as successively as other trades, was because of the fact that students were not grounded sufficiently in the fundamentals. The student must thoroughly understand each unit operation before he attempts to analyze the job. There are about thirty operations (not necessarily connected with each job) that take the job from examining specifications to lockup for cylinder press. The student takes the copy, makes a complete trade analysis of the job, checking the unit operations involved, after which he numbers the operations in the order of their procedure. The second unit operation consists of making a layout of the job. The instructor should inspect this layout, together with the analysis sheet, before the student is allowed to go ahead with the composition.

During the third and fourth semester, students showing marked ability along certain lines should be allowed to specialize. This includes platen presswork, cylinder presswork, and the linotype. Such binding as may be found in the school shop can be done by boys showing an aptitude for this kind of work.

The laws of nearly every state prohibit boys under 16 years of age, working on power-driven machines. As soon as he reaches this age he should be taught to feed the platen press. Many times this is the means of securing a job in a printshop. He goes in as a feeder and is eventually promoted to the position of pressman, or is transferred to the composing room.

The success of trade teaching in printing rests on four objectives:

Thorough training in first principles
A knowledge of type faces
The fitting of type to space
Analysis of the job

Of course, much depends upon the student, his desire to learn, the equipment of the shop, and the ability of the teacher. The success of a proposition of this kind can best be judged by results obtained. These results are not obtained the first year the work is attempted. The plan should be in operation for at least four years before any definite results may be expected.

One of the greatest problems we have to overcome is the problem of getting the boy to assume responsibility. Perhaps one of the most promising projects is that of the student foreman in the shop. Students act as foremen for a limited period and in this capacity assume a foreman's duties, as nearly as possible, as they are practiced in the commercial shop. He checks attendance, assigns work, issues passes, and supervises the work to the best of his ability.

Printing has become one of the most popular subjects taught in the high school. It is comparatively easy to "sell" the printing course to the average student. The romance of printing will appeal to any boy if properly presented. The profession is an honorable one. The tales and traditions of the early printers are as interesting as those of any other profession. The lives of the great printers of the past century may be emulated with profit by all.

The School Exhibit

Jos. J. Lukowitz, Milwaukee, Wis.

IN MANY schools the school exhibit is an annual event. If it is in yours, then make your exhibit more complete this year by exhibiting, as it were, the more intangible values of the work. How? By displaying prominently in the exhibit room or on the work that is being exhibited, a sign such as the following one:

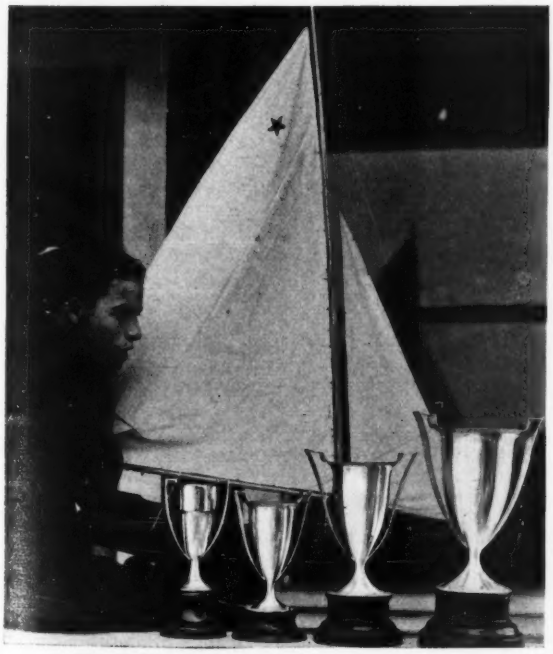
> The utilitarian value of the article made by the boys, is always second to that growth, understanding and development of judgment which is acquired by the contact with tools and materials.

It is not necessary to play up ethereal values or vague objectives for your work, but every visitor to your exhibit will recognize the fact that no boy can be surrounded by fine tools and equipment and be engaged in productive and constructive activity in the school shop, without deriving a great deal of benefit besides that which may be indicated by his work.

From the kindergarten, up through the lower grades, the block-building, paper construction, drawing, and other manipulative work, is all given with the idea that it coordinates mind and hand besides giving the other values peculiar to the particular work under consideration. If these values exist in these simpler activities, surely they function also in the shopwork and the varied contacts with the constructive work, materials, and tools in the higher grades. These values are, of course, recognized by all educators, and they play an important part in the justification of shopwork in the elementary grades.

Since parents are wont to judge the educational value of the work solely by the appearance or value of the articles produced, a sign or poster similar to that shown in the foregoing will tend to give them a better understanding of what the school is really trying to accomplish. In vocational schools the work may be a criterion of what has been accomplished, but at the lower levels of industrial education the appearance of the product gives but a narrow interpretation of the true values which industrial-art work transmits.

The wording on this sign may be a little beyond the understanding of certain communities, but the same thought may be expressed by means of simpler words. For instance, "What the boy makes is not as valuable as what he learns while making it," or "What the boy makes is merely the by-product of what he learns" may be used to express the same idea.



WHICH ONE WILL I GET? LOS ANGELES EVENING HERALD TROPHY CUPS

HAMBURGER INDUSTRIAL-ARTS WORK

Laurence Parker, State Board for Vocational Education, Topeka, Kansas

A story is told of a boy in the arithmetic class studying fractions. He was asked about a pound of steak that was cut into two pieces, three, four, eight, sixteen, etc. When the teacher asked what you would have when the pound was cut into 128 pieces, the boy very correctly stated that he would have hamburger.

A manual-training director was showing the work of his boys to a group of us. There was machinist work which was very well finished. Some good sheet-metal work was shown and some fairly good cabinet-work. There was very little work on exhibition. Someone asked the usual question, "How much shop time do the boys have each day?"

"Unfortunately, it is impossible to give the boys more than an hour a day in any of the shops," he said. Out of this hour of shop time they must come down from the high-school building a third of a mile away and return to the main building. When we learned this fact we realized that the machine-shop teacher, who had managed to get even such a small amount of work out of his boys, was a real teacher and a real hero into the bargain. He was a teacher of "Hamburger" Industrial Arts.

Well, this director is not the only one in the country who is trying to give an appreciation of work and a familiarity with tool processes under similar conditions. There may be types of shopwork where the time necessary to start and stop shopwork is not a factor. In machine shop and auto mechanics a very considerable share of the hour will be spent getting ready to do a job and getting ready at the close of the hour to quit. Even two hours is a short time to spend on such shops. Two hours should be the minimum in any type of shop.

"Well, didn't the director know that the boys were wasting much of their time when taking 'Hamburger' Industrial Arts?" Of course he did, but there was very little that he could do about it because of the schedule. There are many things which may be blamed upon this thing, the schedule, which it may not be to blame for, but it certainly played hob with our friend's department. You see that most subjects require only one hour or one period daily. Schedule-making is easy when all subjects are given for the one hour. But our friend, the director, comes along and asks for a two-hour period for the shop groups. It is claimed that it is easier to pack a high chair in a wardrobe trunk than to fit two-hour periods into a schedule. I have never tried to do either, so cannot vouch for this. Perhaps you can.

One thing is sure, if industrial-arts work must be given in the form of hamburger, it might be best not to give it at all. I am fond of steak and think it very nourishing. When the same is served as hamburger, I am not so sure. Let's see if we cannot plan some way to get rid of the one-hour industrial-arts period and have at least two hours in all shops. If we can get three hours in machine shop and auto shop we shall be well on our way toward the true goal of such shopwork. Let's feed our boys steak and go easy on hamburger.

PROBLEMS AND PROJECTS

This department aims to present a wide variety of class and shop projects in the Industrial Arts. Successful problems are invited and will be paid for. A brief description of constructed problems, not exceeding 250 words in length, should be accompanied by a good working drawing. The originals of the problems in drawing and design should be sent.

Problems in woodworking, turning, patternmaking, machine-shop practice, sheet-metal work, forging, foundry work, auto mechanics, auto electricity, electricity, architectural and mechanical drafting, printing, bookbinding, concrete work, farm mechanics, home mechanics, and other lines of industrial-arts work are desired for consideration.

UNUSUAL JOINTS

John F. Faber and Jonathan Bright, Erie, Pa.

(See Supplement 138)

This chart of unusual joints shows those joints which are occasionally or seldom met in the experience of the woodworker. They were grouped in chart form as a matter of reference and to acquaint the student with some of the joints which he might encounter. The place where such joints might be used, is given under the name of each joint.

A PIG BREAD BOARD

(See Supplement 141)

Charles Rice, North Junior High School, Everett, Washington

The cutting board or bread board, as illustrated, was designed by the writer three years ago at the request of the woodshop instructor. Since that time, the design has been used many times and has proved to be very popular with the students making that type of project. The project seems to have the attributes of interest and utility and when well finished with lacquer or carving, makes an interesting Christmas present.

Step one. Transfer the designs to a piece of hardwood, (solid or plywood.)

Step two. Saw out the design on the band saw or by hand.

Step three. File the edges until smooth.

Step four. Bore a ⅜-in. hole for the eye. To do this bore through the board until the spur of the bit shows, then turn the board over and finish boring the hole from that side, being careful not to injure the adjoining surface of the board.

Step five. Plane both surfaces.

Step six. Sandpaper both surfaces and edges.

The Finish. The edges, including the inside of the eye, may be covered with colored lacquer or enamel. The surfaces may be given a coat of linseed oil, and when dry, a thin coat of shellac or clear lacquer might be used to protect the board.

Some vein carving may be worked on the large surfaces to give more details and develop further the character of the familiar farm animal, if one wishes to spend the time.

THE WEIGHT OF LINES USED IN MECHANICAL DRAWING

August Flam, Los Angeles, Calif.

By permitting our alphabet of lines to contain too many different kinds of lines, we are making a complicated issue of what should be a comparatively simple matter.

Here is something which the teacher of drafting can control—why not cut down to essentials for the sake of simplicity?

In the writer's opinion, four different kinds of lines with two grades of thickness not only satisfy the requirements in school, but will be found sufficient for use in most up-to-date industrial establishments.

The four essential lines are shown in the following illustrations:

As far as thickness of lines is concerned, for the visible outline, a rather dark line is desirable, and hence approximately 1/32 in. in thickness may be used. The other three kinds of lines should be about 1/3 the weight of this line, judged by eyesight alone.

The teacher should post samples of the different lines on a drawing board in front of the class, and the students should be required to match these samples on small slips of drawing paper, to which they can then refer, as the need arises. The student who makes his own samples through repeated trials, is more apt to retain the weight of the lines in his memory than the one who had the sample made up for him.

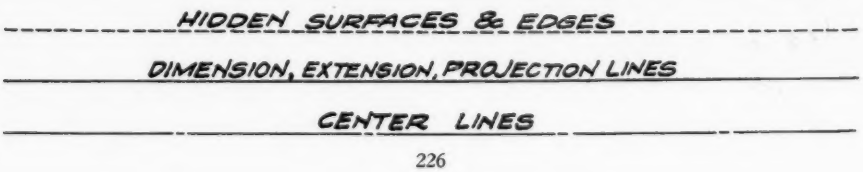
THE USE OF SOLE OR HEAVY LEATHER IN ART

L. C. Ude, Educational Director American Leather Producers, Inc.

Sole leather readily adapts itself to a multitude of uses and the clever craftsman can find innumerable articles, both useful and decorative, which, when made of this material, are assured a permanency that is not outlived by any other substance. Today we still find in the ruins of past civilizations the work of the leather craftsman and in many instances we learn of leather arts which have become lost to us. Beautifully worked cases and flasks of pressed and stained rawhide or heavy leather made hundreds of years ago are exhibited in museums. Still we have today the same materials, improved by scientific research and tanning experience, that can be turned into useful and decorative articles by a skillful hand.

The accompanying illustrations outline a simple case or tobacco jar which of course can be made a most elaborate and delicate affair by hand tooling or any other of the numerous decorative arts so readily applied to leather. For our purpose we have left the surfaces plain and relied on the wonderful color and finish obtained by waxing and polishing the heavy leather, leaving the brown or russet texture, smooth to the touch and so attractive in itself.

The two strips of heavy sole leather, *A* and *B*, are cut to the width and length required by the given jar and are well soaked in water. Selecting a core, in this case a bottle *E* was used, the strips are tightly strapped to hold them in position until dry, *A* being the inner piece with the grain or finished side of the leather to the inside, and *B* the outer piece with the finish to the outside. The cutting knife must be thin and of exceptional sharpness to cut a smooth edge



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JUNE, 1929

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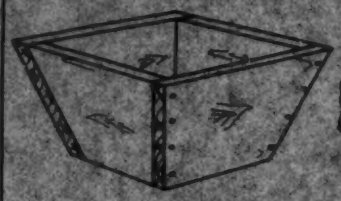
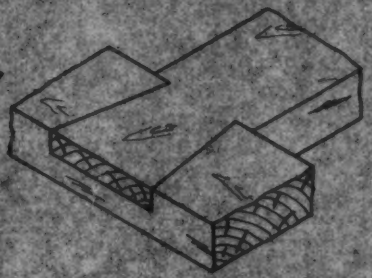
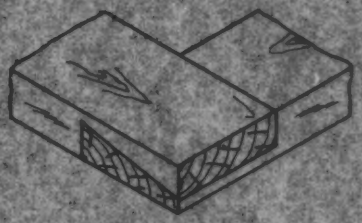
— UNUSUAL WOODWORKING JOINTS —



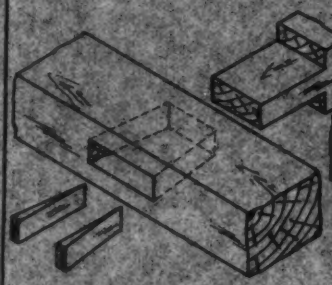
NO. 1 - HOPPER
Hopper bins, etc.



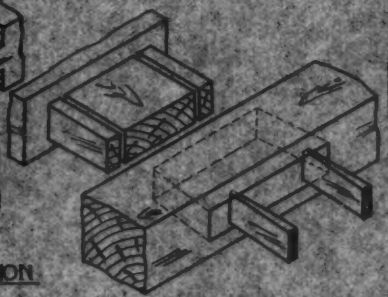
NO. 2 - MIDDLE LAP DOVETAIL
To withstand tension



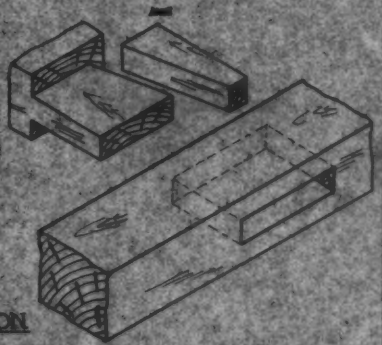
NO. 3 - END LAP BEVEL
formerly in house or barn framing



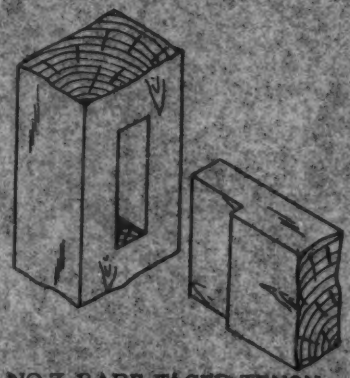
NO. 4 - WEDGED MORTISE & TENON
Spoke of a wheel



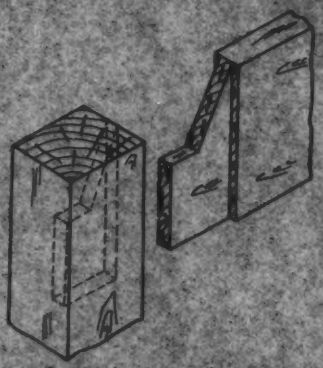
NO. 5 - WEDGED MORTISE & TENON
Sash and doors



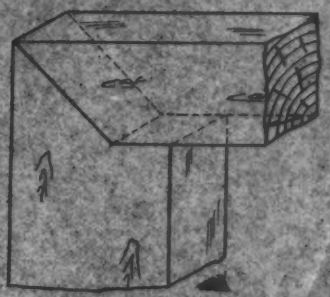
NO. 6 - DOVETAIL MORTISE & TENON
Beams



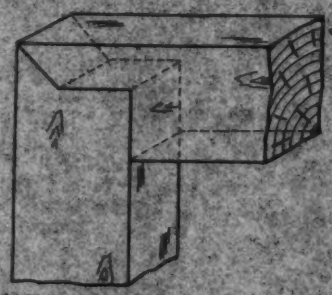
NO. 7 - BARE-FACED TENON
Tables



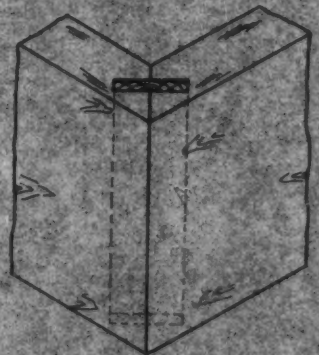
NO. 8 - TABLE HAUNCHING
Tables



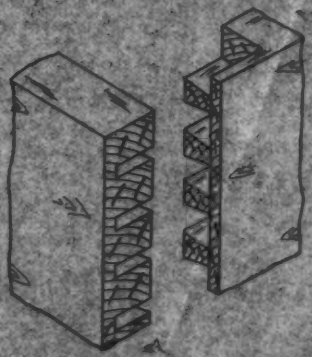
NO. 9 - STOPPED MITER
Different width pieces



NO. 10 - LEDGE & MITER
Boxes and chests



NO. 11 - SPLINE MITER
Boxes and chests



NO. 12 - STOPPED LAP DOVETAIL
Drawer fronts (rarely)

UNIV. OF MICH.

Designed by John P. Faber and Jonathan Bright, Erie, Pa.

For Description See Page 226, Industrial-Arts Magazine, June, 1929.

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JUNE, 1929

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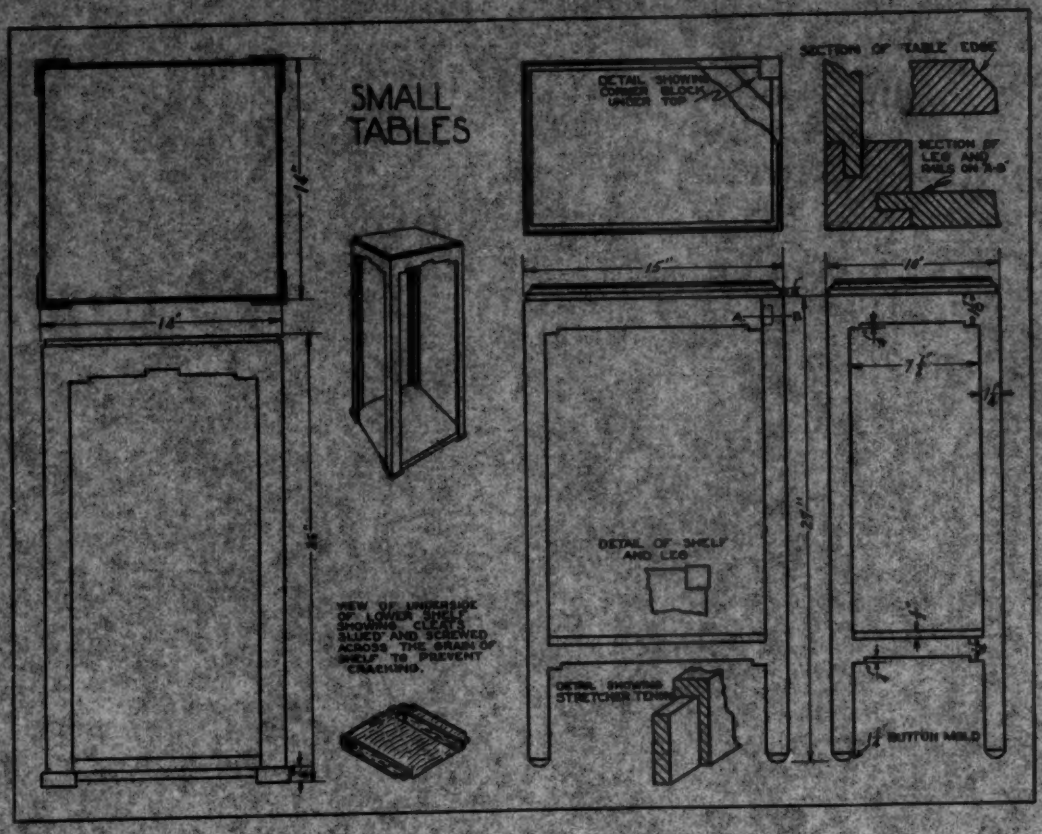
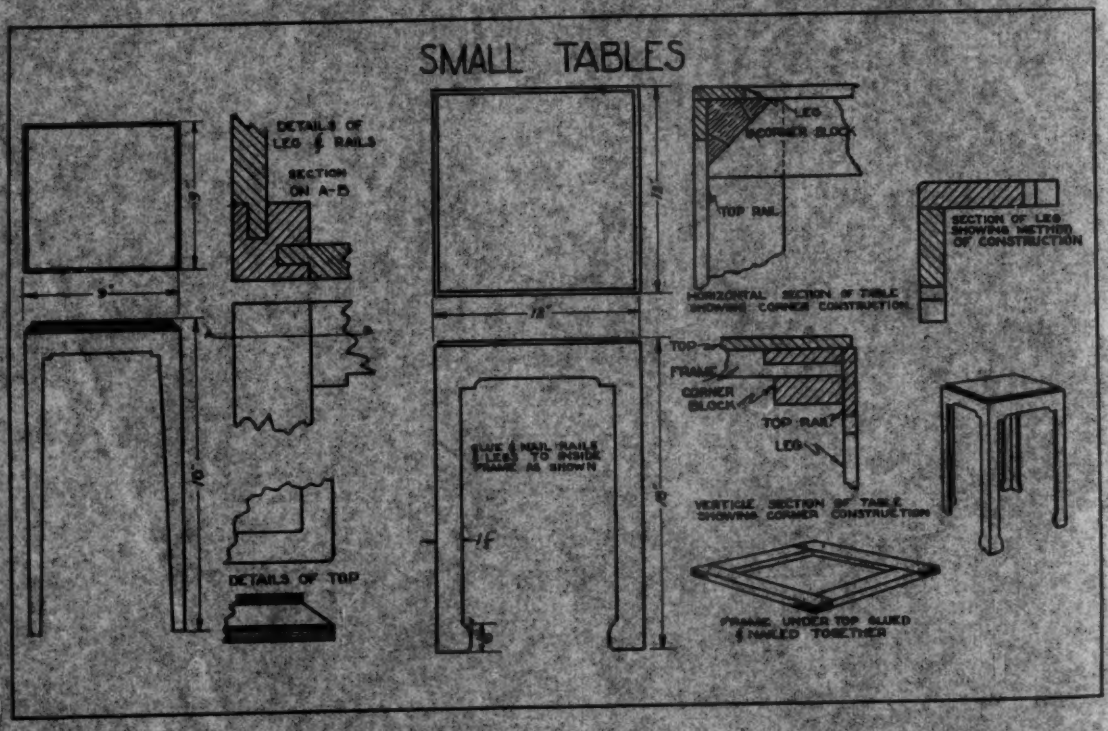

SMALL TABLES
DETAIL SHOWING CORNER BLOCK UNDER TOP
SECTION OF TABLE EDGE
SECTION OF LEG AND RAILS ON A-B
14"
14"
15"
16"
7"
1¼"
DETAIL OF SHELF AND LEG
DETAIL SHOWING STRETCHER TENON
½" BUTTON MOLD
VIEW OF UNDERSIDE OF LOWER SHELF SHOWING CLEATS GLUED AND SCREWED ACROSS THE GRAIN OF SHELF TO PREVENT CRACKING.



Designed by C. A. Kunes, Los Angeles, Calif.

For Description See Page 215, Industrial-Arts Magazine, June, 1929.

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THE INDUSTRIAL-ARTS MAGAZINE,
JUNE, 1929

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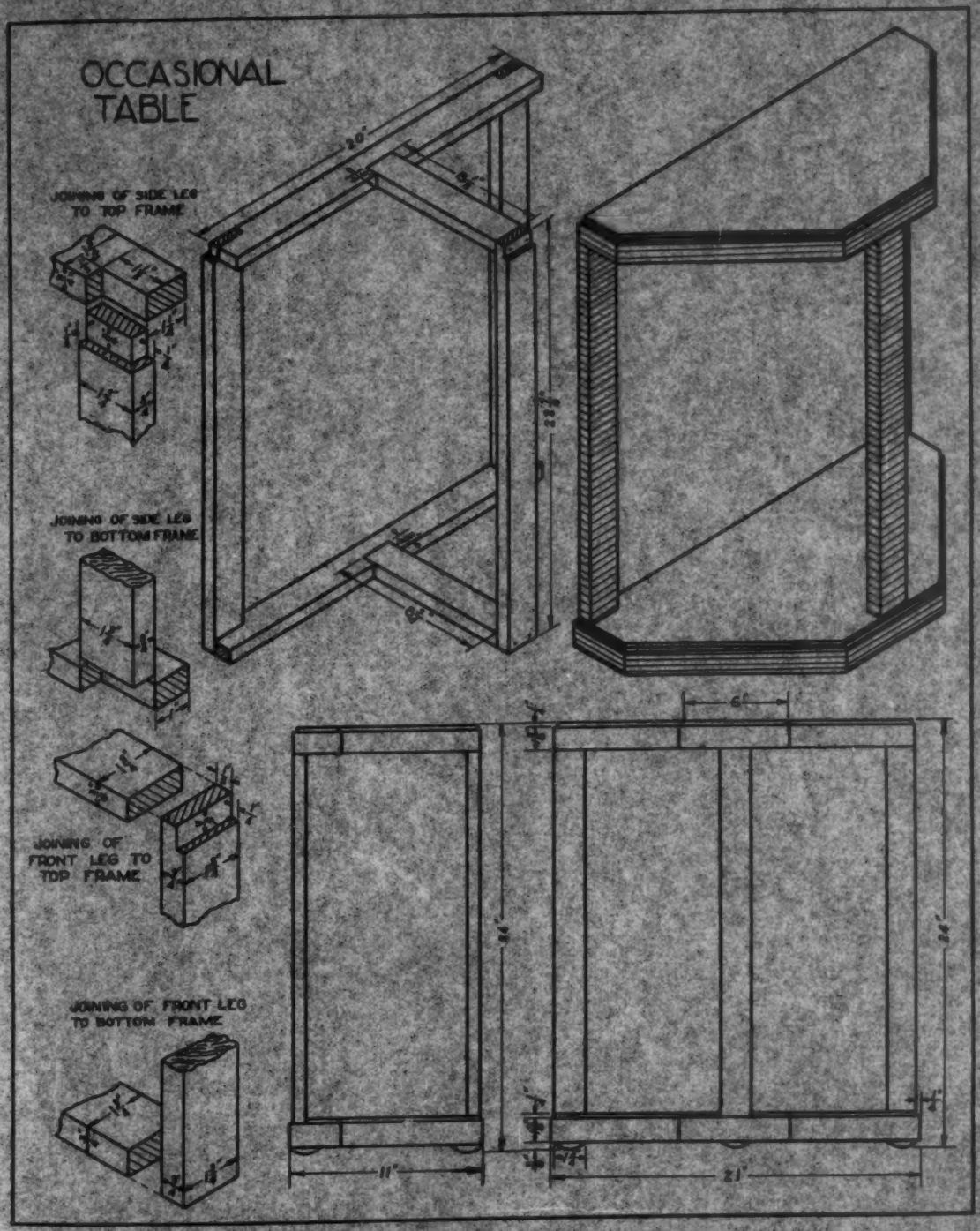
OCCASIONAL TABLE


JOINING OF SIDE LEG TO TOP FRAME
JOINING OF SIDE LEG TO BOTTOM FRAME
JOINING OF FRONT LEG TO TOP FRAME
JOINING OF FRONT LEG TO BOTTOM FRAME
20"
6"
11"
21"

Designed by C. A. Kunon, Los Angeles, Calif.

For Description See Page 214, Industrial-Arts Magazine, June, 1929.

UNIV OF MICH.

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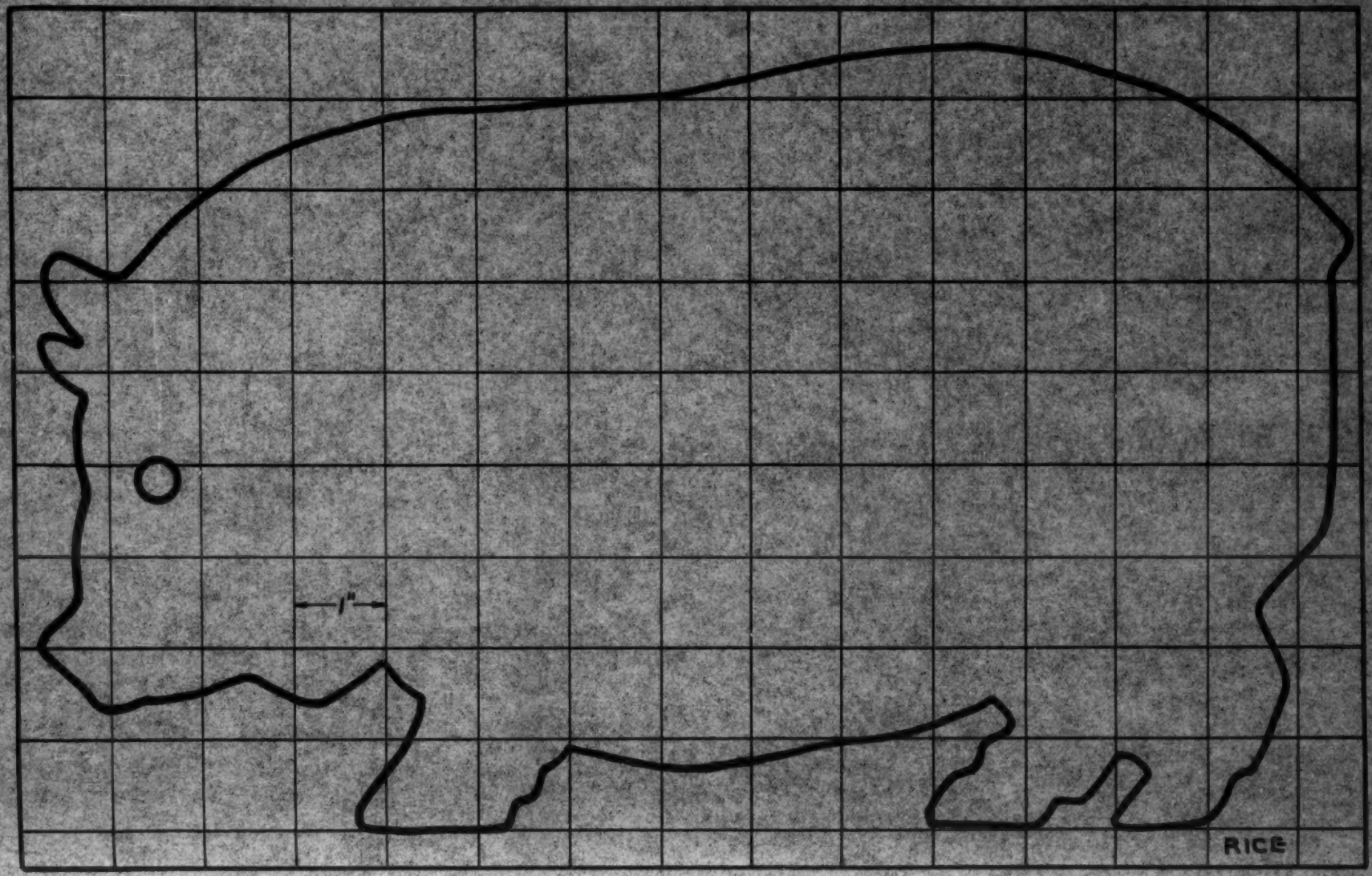
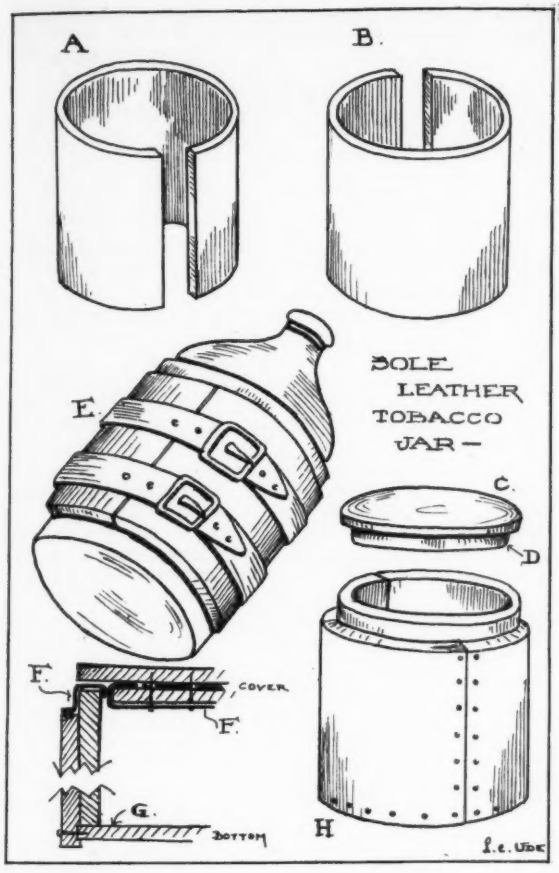


Designed by Charles Rice, Everett, Wash.

For Description See Page 226, Industrial-Arts Magazine, June, 1929.



because the thousands of fibers making up leather are closely woven and strong, and the best of blades soon loses its cutting power and must be frequently resharpened. When dry it will be found that the leather tends to retain its cylindrical shape and it can then be more easily handled.

The ends or edges of *A* (inside piece) can now be glued together by using a good cabinetmaker's glue, and then piece *B* glued tightly around it, the whole being again strapped to the bottle or core, as shown, and held until the glue has dried. In this case both strips are of the same width but the inner cylinder is glued so as to extend about one-half inch over at the top, thus leaving a half inch at the bottom to provide a good support to which to fasten the circular piece of heavy leather cut for the bottom as shown on the cross-section *G*. This, too, is glued tightly in position and a slight groove, cut in the outer side strip, provides a seal and additional strength. Brass nails have been used as shown more as a decorative effect than as a necessity, running around the bottom and along the two joining edges of the jar.

The top is made up of two circular pieces of sole leather, *C* and *D*, but to provide a close seal, *D* has been covered with a piece of russet upholstery leather and glued and nailed to the top. A circular piece of this leather must also be cut, thoroughly wetted, and pulled over the top of the jar proper, being worked down and around the upper edges as shown by *F*. After it has become dry it will retain its shape and can then be glued into position following which the center is cut out and edges are trimmed with a sharp knife and pressed down firmly. Clean edges can only be obtained with a sharp knife.

The entire jar is then waxed and polished but upon the ingenuity and skill of the craftsman depends the ease or difficulty with which this simple tobacco jar can be made. It illustrates but one of a thousand lasting and beautiful articles that can be made of sole or heavy leather. The entire surface may be tooled or stamped or finished in any one of many ways, but to a lover of leather, the smooth satiny finish of a polished leather article provides a beauty sufficient in itself.

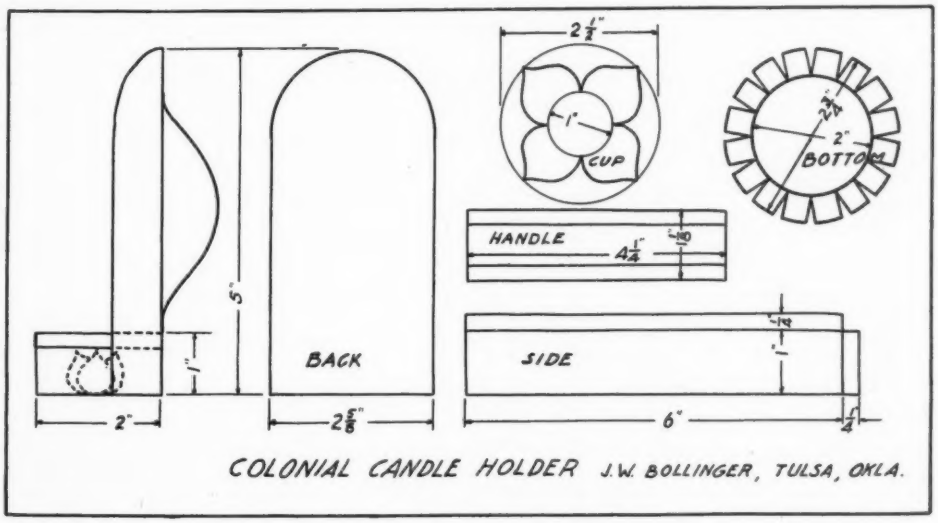
COLONIAL CANDLE HOLDER

J. W. Bollinger, Tulsa, Okla.

The candle holder shown in the accompanying illustration is one that was quite commonly used in early Colonial times. It makes an interesting project for a sheet-metal class.

The entire problem is to be made of black sheet iron, gauge 24. After cutting out the pieces, cover them with hammer marks made with a ball peen hammer. Begin the shaping by rounding up the side, and riveting it together with 1 lb. black iron rivets. Shape the bottom either over the conductor stake, or over a specially prepared piece of pipe fitting or iron bar of the proper diameter. The bottom is to be riveted in place with eight rivets evenly spaced around the side. Some of these rivets are not put in until the back has been fitted in place. The back should be put on so that it covers the joint in the side. Riveting the handle and cup in place finishes the job. The cup should be shaped over the square end of a piece of 1-in. round cold rolled steel.

Polish the job with steel wool to bring out the high lights, and cover with a coat of clear lacquer. The lacquer will not change the color, but will preserve the natural iron finish.



A TYPICAL UNIT ON PAINTING AND DECORATING

Henry Wagner, Milwaukee Vocational School, Milwaukee, Wis.

Objectives of the Course

1. To learn how to use a lining brush correctly.
2. To learn how to produce certain panel effects.

Introductory Information

Lines are usually used to connect corners or other decorations. They should have a uniform width and run true. The straightedge should be a strip of wood about ¼ in. thick, or even thinner, and have one or both edges beveled. Figure 1 shows the form of the bevel and the manner of

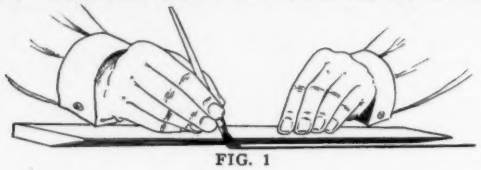


FIG. 1

holding the brush against the edge. The brushes used are those called "fresco liners." They can be obtained in various widths.

Practical Work

Tools	*Materials*
Fresco liners or fitches	Oil color (select proper shade for lining)
Chalk line and plumb bob ruler	Turpentine
Straightedge (for lining)	Linseed oil
Small pails (½ gal.)	
Step ladder	

NOTE: Before starting the practical work in this unit, ask the instructor for a demonstration of the proper way in which to hold the straightedge.

1. Measure the surface at both ends to get the exact place where the line is wanted.
2. Then snap the chalk line for guidance.
3. Select the lining fitch for width of line to be run.

Fresco liners come in various widths as follows: ¼ in., ½ in., ⅝ in., and 1 in., and are made of white Chinese bristle.

4. Put straightedge on in the proper way.
5. Draw a straight line over the chalk line, using the fitch.

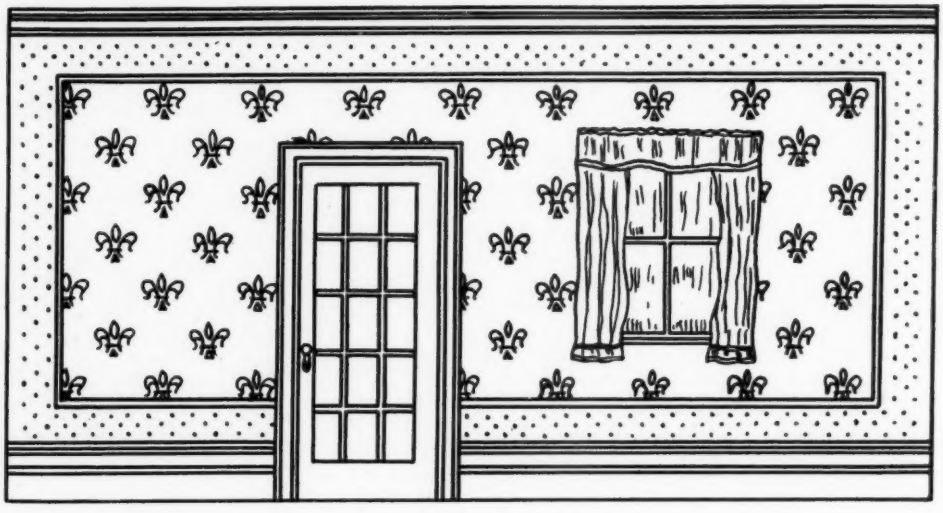


FIG. 2

The first step is to break up the large areas of the side walls or ceiling into smaller units that can be more readily handled. Figure 2 shows how paneling may be designed so as to apparently influence the room size, and to make it appear better proportioned.

Lining is done after all other wall painting is finished.

In addition to the use of paneling as a method of breaking up a large surface, it has the advantage, where there are low ceiling interiors such as in long hallways, of apparently fore-

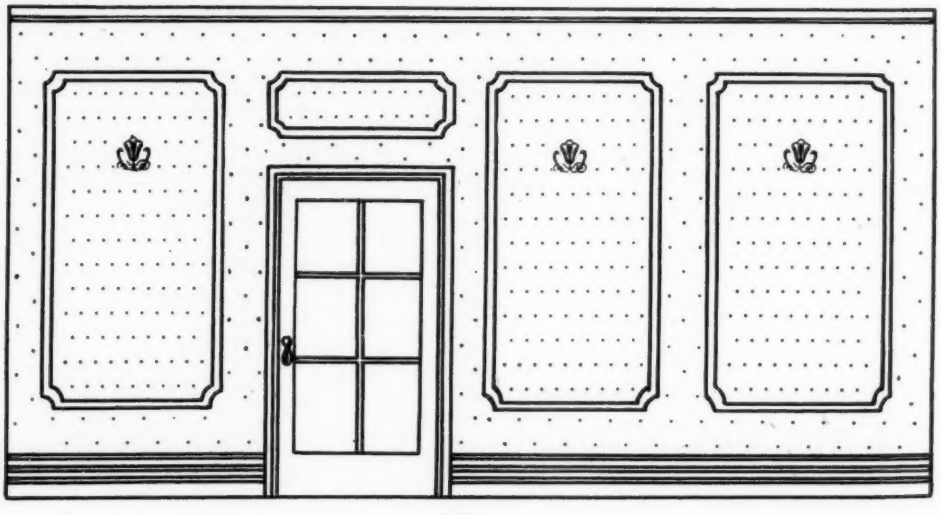


FIG. 3

shortening the lines. This will be accompanied by a feeling of increased height if narrow, vertical panels are employed on the side walls.

Questions to Be Answered

1. Give reasons for lining a surface.
2. Must lines be of uniform width?
3. Why is a snap line used?
4. How are panels laid off?
5. Name the various tools used in working out this unit.
6. Is lining done before or after a wall is painted?

CLOCK CASES AS SCHOOL PROJECTS

W. W. White, Waterloo, Iowa

The making of a clock case provides many splendid operations for the teaching of woodwork and the product is a piece of furniture which becomes the center of the home for many years. If these hand-made cases are designed with some originality and individuality they become more valuable to the owner as the years pass.

Since most of our modern homes do not provide a suitable place for the tall grandfather clock, we must look for other designs which may be hung on the wall or placed on the mantel. Among the mantel clocks found in the stores today there is little choice, as most of them conform to about the same monotonous lines. The designs shown herewith are therefore offered to stimulate better and more individual types of clock cases. All of those shown have been constructed and are now in use, causing much comment and approval.

Clock movements are quite inexpensive, an eight-day movement can be obtained for as little as $3.75.

Dimensions are omitted because the movements should always be purchased before the case is designed, and the sizes must be made to conform to the face and other dimensions of the mechanism. Furthermore, the place where the clock is to be placed as well as the surrounding colors must determine the design and the kind of wood used.

In the school shop it seems best to band saw the curves found in mantel clocks rather than use the bent-wood method employed in the factories.

The large design with the cathedral door would fit well above the fireplace and the rather intricate door need not be carved if that seems too difficult, but may be merely lined in with colors.

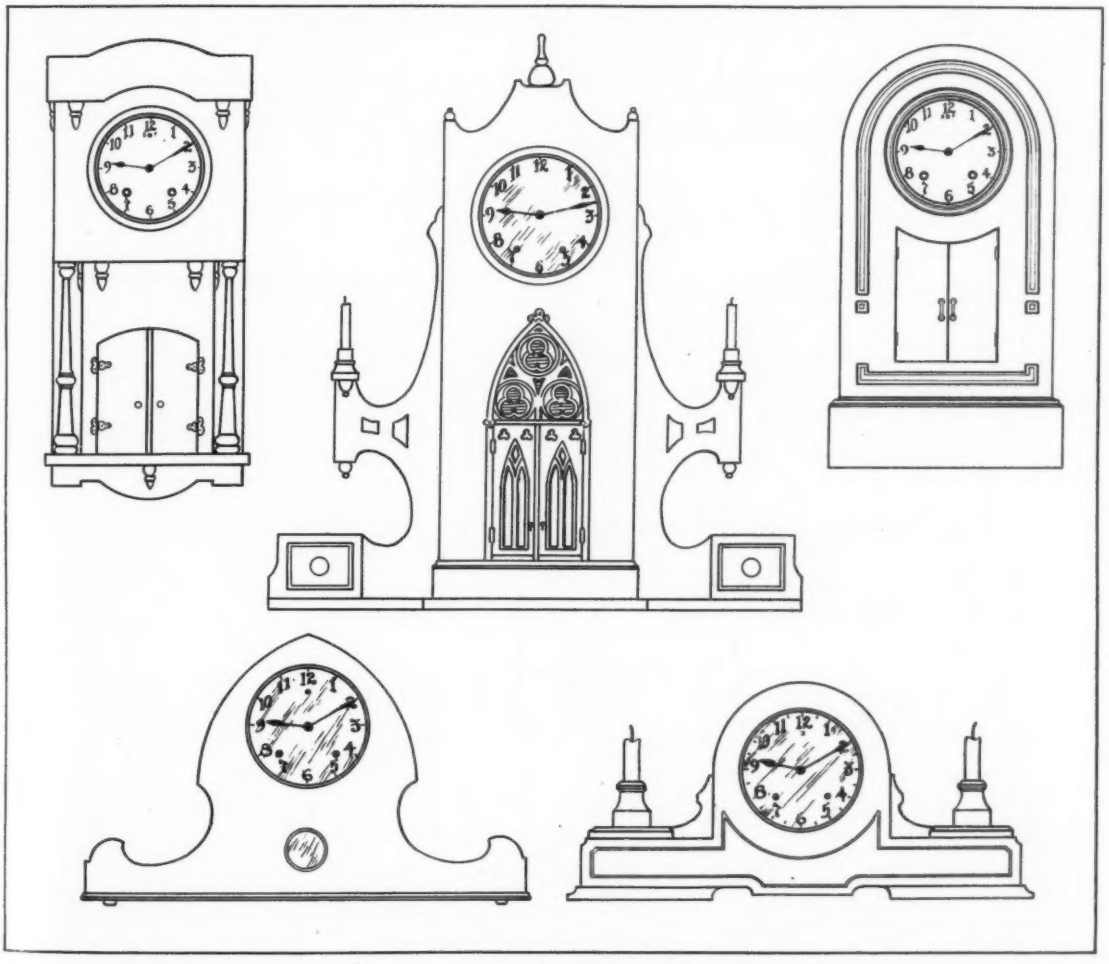
THE USE OF THE TYPE SHEET

R. Randolph Karch, Harding Junior High School, Steubenville, Ohio

The value of the layout, or "typographical blue print" is understood by most printers, who profit greatly from this knowledge.

According to the general conception, there is no clear distinction between a mere sketch and a layout, although it is usually understood that the latter calls for detailed information relative to sizes of border, space taken, type sizes, etc.

A layout or sketch may easily be drawn to look well, but often when the attempt is made to achieve to a like effect in type difficulty is encountered. This is due to the fact that the cold type called for does not conform to that drawn on the layout, being either of different shape or thickness, and naturally cannot be stretched or condensed to obtain the effect planned. Men of practical experience, especially in newspaper advertising rooms, realize how true this is.



CLOCK CASES. W. W. WHITE, WATERLOO, IOWA

6 Point Caslon Black
I believe in the United States of America as a government of the people, by the people, for the people, whose
8 Point Caslon Black
I believe in the United States of America as a government of the people, by the people,
10 Point Caslon Black
I believe in the United States of America as a government of the
12 Point Caslon Black
I believe in the United States of America as a government of
14 Point Caslon Black
I believe in the United States of America as a gov
18 Point Caslon Black
I believe in the United States of Ameri
24 Point Caslon Black
I believe in the United States
30 Point Caslon Black
I believe in the United S
36 Point Caslon Black
42 Point Caslon Black
48 Point Caslon Black
60 Point Caslon Black
72 Point Caslon Black

TYPE SHEET, SUBMITTED BY R. RANDOLPH KARCH, STEUBENVILLE, OHIO

Furthermore, when novices are making the layouts, and when familiarity with type faces is lacking, lines often fail to fit in the designated space. This results in the resetting of several lines in the job, which wastes both time and effort. This evil can be corrected easily if a type sheet is used, from which the heights and thicknesses of the various letters found in the shop's cases can be obtained at a glance. When conscientiously used, the type sheet will remedy the faulty layout.

The type sheet should contain a line of caps, lower case, figures, points and one or more lines of text matter of every face and size of type in the shop.

The type should be printed as large as possible. The size shown in the accompanying illustration is 12 by 19 in., form size 62 by 108 picas. It was run on a 12 by 18-in. press. The size adopted allowed for the showing of a line of caps, lower case, figures and points, and one line of text matter for a whole series of type from 6 to 72 points.

The perpendicular lines are printed one pica apart, and in a lighter color than the balance of the form. These lines are numbered from 1 to 32 and from 1 to 30 across the top of the sheet for the smaller sizes of type, and from 1 to 62 at the bottom for the larger sizes of type.

This makes the use of the pica-rule unnecessary when laying out a job, as the space taken by the letters is readily seen. A T-square is a handy tool for the layout table to hold over the respective measures, especially if the sheet or sheets are mounted on a desk under glass.

The layout sheet shown in the illustration was set in the following manner: A 2-point rule formed the border. Two-point center-face hair-line rule was used for the perpendicular lines. Horizontal lines were not used because the size of each face of type is indicated. The rule under the top figures and over the bottom figures was made by a verticle rule at the end of a 10-point linotype slug. The same slug formed the spacing material needed between the 2-point rules. (Ten point slug + 2-point rule = 12 points = one pica.) Six-point figures were centered by hand in the 10-point space. The rule work was printed in light blue, and the type matter in black. This procedure makes a seemingly difficult set-up easy.

Mounted under glass, four of these type sheets greatly facilitate layout work done by the students in the printshop.

A SUGGESTIVE RATING SCHEME

Frank P. Rich, Memorial High School for Boys, Boston, Massachusetts

Rating the achievements or failures of pupils in any phase of endeavor is a very important part of the teaching job, and unless one has certain well-defined standards upon which to base his judgment, unsatisfactory results are bound to occur.

It is an accepted fact that if one is to rate pupils justly, he must have a thorough knowledge of his subject. Just as important, however, is a thorough knowledge of the aims and objectives of the particular subject. There is a great difference in the objectives of pupils who are taking shopwork as a manual-training or prevocational subject, and those who have selected some form of shopwork in a trade school or vocational high school.

The trade factors that are a part of the job remain the same, irrespective of the type of school. The rating values, however, vary a great deal.

The U.T.A. School of Printing has a rating scheme that lays especial stress on the factors of speed, accuracy, workmanship, neatness, attitude, and aptitude. Each factor is given a certain value in points, and when totaled, it gives the rating for the finished job. I used this rating form in my elementary-school classes where it proved its worth to the satisfaction of the pupils and of myself.

Later on I tried this same rating form in my cooperative shop classes in high school, but found that it did not quite answer the purpose, and that a more direct method was needed.

Using the U.T.A. rating form as a basis, I listed the elements that went into the making of a perfect piece of printing. Analyzing these trade elements, it became apparent that if one was to produce an excellent job (one of grade *A*) all the elements would have to be incorporated in the production of the job. The omission of any one of these factors would mean a job of *B* grade; the omission of two elements would result in a job of *C* grade, and to omit three elements would be equivalent to a job of *D* grade, etc. Following this line of reasoning, I determined to rate all jobs as being of *A, B, C, D* or *E* grade, as follows:

An *A* rating (Excellent — 90 to 100%) requires that a job shall be done by a pupil without assistance in any form from his instructor, and that the technique shall be flawless. By technique is meant the use of the right thing in the right place at all times.

A *B* rating (Good — 75 to 89%) demands a job of good workmanship according to accepted trade standards. The mechanical operations of the job must be performed by the pupil without aid; he is permitted, however, to seek advice.

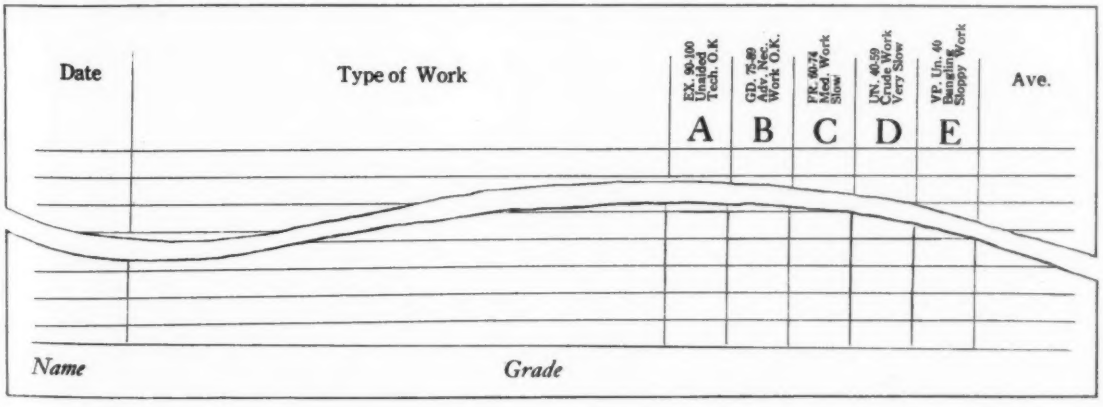
The *C* rating (Fair — 60 to 74%) denotes a mediocre job in which trade operation skills have been neglected, and shop sense and speed are lacking.

A *D* rating (Unsatisfactory — 40 to 59%) is given to a job in which the workmanship is crude and the basic fundamentals have been neglected or abused; accuracy is also lacking.

A job that is rated *E* (Very poor — under 40%) is a bungling and sloppy piece of work. This mark usually falls to the lot of a pupil who shows a woeful lack of aptitude.

As a result of the above analysis, the following rating card has been developed:

Rating the pupil on this form takes but a moment. Each pupil has his own individual card and he receives his rating at the completion of each job. It is at this point that the flaws in the work are pointed out and recommendations for improving the work are given.



ORIGINAL SIZE OF CARD 5 BY 8 IN. THE PRINTING IS THE SAME ON FRONT AND BACK OF CARD.

Of the many elements involved, trade technique is stressed particularly, and it is for this reason that it is rated highly. The points awarded for technique are worth striving for. The ability to do a job unaided also rates high. Pupils are made to realize, however, that it is better to seek advice and render good workmanship than to try to work unaided and produce a mediocre job.

A grade of *A* is the standard set for all work, and all jobs must attain this grade before they are passed and marked O.K.

To stimulate perfect attendance in my classes two points are deducted from a pupil's monthly rating for each day he is absent. This penalty has been inserted to take care of those pupils who can do good work and who enjoy good marks, but who feel they can miss a shop lesson whenever the mood prompts them to do so.

This rating scheme is very popular with my classes. The objectives are very clear and the pupils understand what is expected of them. The "hit and miss" method of marking is out of date. The pupil of today wants to be shown, and, as one pupil remarked: "This form shows us—and how!"

INSTRUCTION SHEET ON SQUARING STOCK IN THE SHAPER

Edward N. Wallen, Textile High School, New York, N. Y.

The following principles should be studied and followed when squaring stock in the shaper. It makes no difference what the size of the stock is nor what it is going to be. If it is to be square, follow these directions.

When you receive the stock it will have four rough sides. The first thing to do is to make one side flat and smooth. Put the stock in the vise as shown in Figure 1. *F* is the fixed jaw on the vise, *M*, the movable jaw, and *P*, the parallels. Use parallels high enough to lift the top surface of the stock so that the tool will not cut into the jaw.

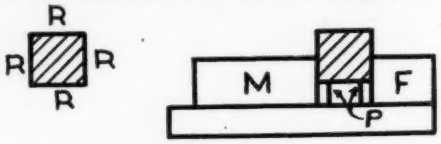


FIG. 1

When the top surface is finished you will have three sides rough and one side smooth. Place the smooth face against the fixed jaw, as shown in Figure 2. Place a solid round rod of convenient size between the movable jaw and the stock. The reason for this is that the movable jaw may not be square, or that it may spring when it is tightened.

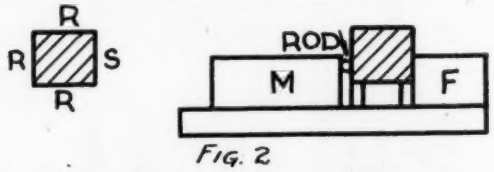


FIG. 2

As can be seen in Figure 2, the rod acts as a pivot and the smooth side will be flat against the fixed jaw. After the cut has been taken, there will be two sides which are smooth and square with each other. *If*, after testing for squareness by placing a reliable square on the stock as shown in Figure 3, you find it is not perfectly square proceed as follows:

Place a piece of thin paper (See Fig. 4) between the solid jaw and the stock either at the bottom or top of the jaw, wherever you see it is needed to make the stock square.

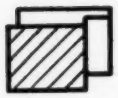


FIG. 3

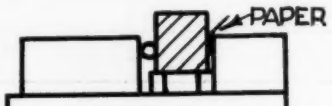


FIG. 4

Cigarette paper is the best to use as it is very thin. Take another cut and test for squareness again. Continue this process until the two sides are perfectly square, then proceed with the remaining sides in the same manner.

WROUGHT-IRON STAND

Lindsey Boozer, Jr., Wardlaw Junior High School, Columbia, South Carolina

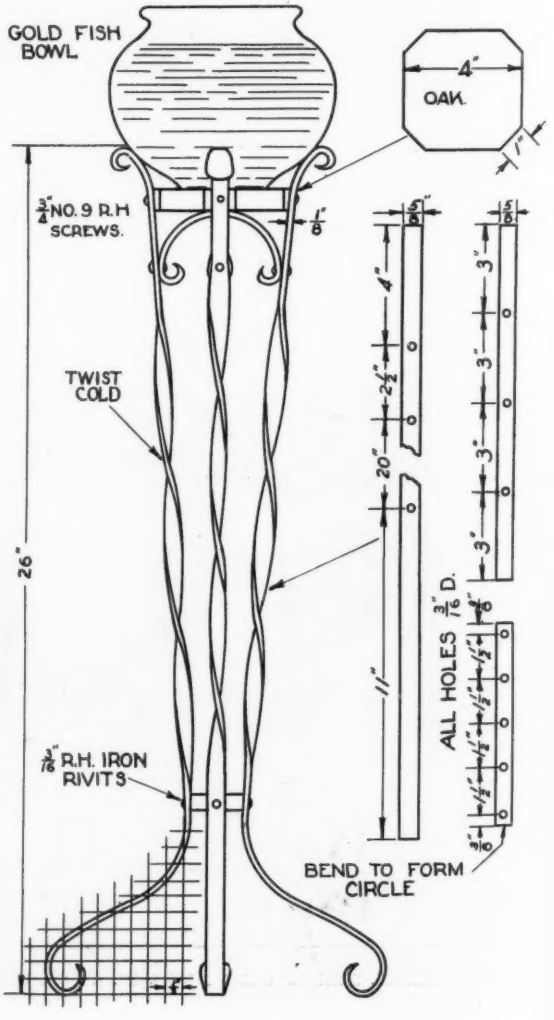
The wrought-iron stand shown in the accompanying illustrations makes an interesting and useful project for the junior-high-school general shop. With slight alterations it may be used as a plant stand or as a smoking stand.

Soft, ⅛ by ⅝ in. band iron is used for the project. The pieces are cut to the correct length and the holes center punched and drilled with a 3/16-in. drill. The ends are heated in the soldering furnace and turned over a ¾-in. iron rod. The other curves may be obtained by hammering the stock while cold on the horn of the anvil.

A smooth twist may be obtained by clamping the stock in the vise at one extremity of the twisted portion, then clamping a monkey wrench at the other extremity and twisting cold.

The instructor must insist that all pieces be correctly shaped before

WROUGHT IRON STAND



assembly, as it is difficult to correct mistakes after the pieces are riveted together. If the pupils are required to get rivets and screws from the instructor, it is an easy matter to check the work before assembly.

The project may be finished natural by rubbing with oil, and then coating with clear varnish. If a bright colored finish is desired, semiquick drying enamel will be found more satisfactory than quick drying lacquers.

A FEAST OF LANTERNS

Ethel Ernesti, South Junior High School, Colorado Springs, Colo.

Lanterns for drop lights, constructed of such material as are found in the art department of a junior high school, furnish a good vehicle for a problem in design.

By means of a discussion of design, and a study of pictures of articles made by professional designers, impress the students of grade 9 with the idea that a design must be (1) appropriate for the object for which it is intended, (2) suitable to the material of which it is to be made, and (3) fit the space for which it is intended.

After these preliminaries, each student is to plan the size and shape of his own lantern. Thereupon he is asked to cut a piece of this typewriting paper to the exact size and shape of the panel which he has designed for his lantern. Half of the design is then laid out on the paper with a soft pencil, the paper having been first folded lengthwise or crosswise according to the shape of the lantern. If the panel is irregular in shape, it is better to fold it lengthwise. If the shape is regular, however, it should be folded crosswise.

After half of the design has been laid out, the paper is carefully folded and placed upon a smooth surface. The back or unpenciled side is then rubbed with the thumb nail or with the wooden part of the pencil until the design is reproduced lightly upon the other half of the tin paper. The students can then decide whether or not his design is satisfactory. If it is, the pencil lines are strengthened and then transferred to the lantern which has been previously cut of oak tag paper. The design can be transferred by using carbon paper, or by simply placing the design with the penciled side against the oak tag, and tracing over the design which shows clearly through the thin paper. With the latter method, the oak tag is kept cleaner and there are fewer chances for mistakes. The students need to see both methods in order to choose the best.

After the designs have been neatly traced, a color scheme must be chosen and painted on with dye. The dye is best for this, because it has the quality of being transparent. Any good dye may be used, but it should be strained first. It can be obtained in bottles, ready for use, and may be diluted or mixed to make any shade or tint. Strong colors are needed as the oil and electric light both tend to flatten or dull the brilliancy of the color. If a light color scheme is chosen for the outside of the lantern, the inside should be tinted from dark to light, or in some cases mottled with dye to give an interesting color effect when the light is turned on.

We have found by experiment that warm colors containing green look best, because when the yellow light shows through, it turns blues to green and violets to a rather dull gray.

After the designs are painted on, they should be outlined with a lettering pen using black ink. Some simple panel shapes may be made more interesting by adding scrolls which also may be put on with a lettering pen.

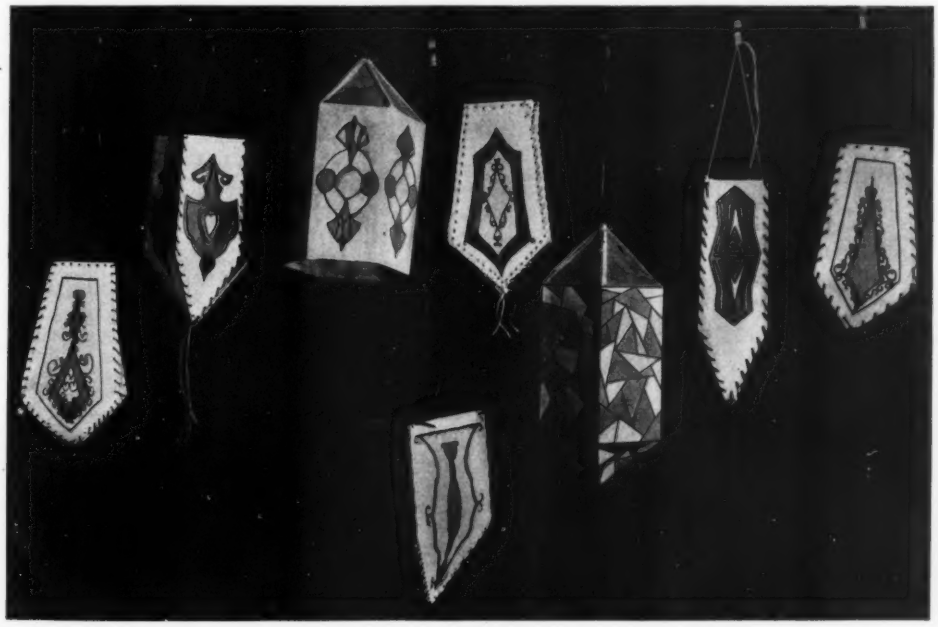
After the color work and ink is dry, the lanterns must be laid flat and oiled on both sides with Three-In-One oil in order to make the oak tag transparent and as near as possible like the parchment now so much used for lamp shades.

The holes are then punched in the panels intended for lacing. These holes should be about ¼ in. from the edge so that they will not tear out when the lacing is done.

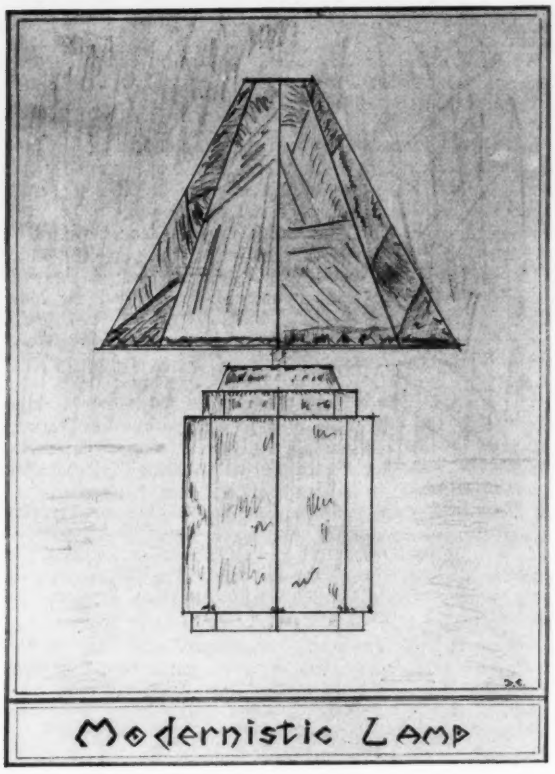
The lanterns which are to be fastened with paste or glue, must be fastened together before they are oiled, because the paste or glue does not work well on the oiled surface. We use two methods of pasting. In one, flaps ¼ in. are left for the paste; in the other, ½-in. gummed paper strips are cut from paper tape which is used for holding the wrapping on parcels. This tape is cut and folded along the edges before it is wet. It must also be painted in a color to harmonize with the design unit or the cut edges. The design must be outlined upon it with a lettering pen. These little touches add to the decoration.

The pasted lanterns which are planned with a closed top, must have one section left open to admit the drop light. When this is inserted, the section must be closed with paper fasteners, to which cord of the color of the design is fastened so that the lantern can be tied to the electric-light cord.

The sockets used in all these lanterns should, of course, be of the keyless type, the current for the lamps being turned on at a wall switch. The panels which are planned for lacing may be put together with various kinds of lacings. Leather thongs from the leather shop are the easiest to work with, and are usually also the most popular. Seconds may be bought, which answer very well for the purpose, and are



much cheaper. Cord, baby ribbon, and even Christmas tape from the "five and ten" can all be used to advantage. The lanterns with an open top need a strengthening band at the top. For this purpose narrow strips of cardboard or wire may be used.



THE MODERNISTIC LAMP

Deane E. Eldridge, Director of Industrial Arts, Plymouth, Massachusetts

"Ring out the old, ring in the new," may be a New Year's slogan, but how appropriately it fits our new style of furniture. Some may say that a school shop is no place to experiment with modernistic furniture. Perhaps so and perhaps not, but one thing is certain, it arouses interest in the boys even though they may not know what it is all about.

A glance at the characteristics of the so-called Art Nouveau will convince one that it is thoroughly in keeping with our age and therefore contains the characteristics that will remain as symbolic of this particular era. It seems, therefore, that our boys ought to have the opportunity to make some simple piece such as a lamp, bookcase, footstool, or chair-side table to better understand this new period of furniture which is as representative of our times as was the Empire furniture in its day and age.

Because of its stark simplicity in design and construction, this modernistic lamp becomes an elementary project which the beginner may undertake with success. Its contour resembles the modern architecture with its successive steps, each of which seems to lie on a separate plane. Made from an inexpensive wood such as pine, and lacquered in any of the popular colors, Chinese red, jade green, Indian yellow, or Chinese ming blue, this lamp creates a startling impression on the lover of the unusual.

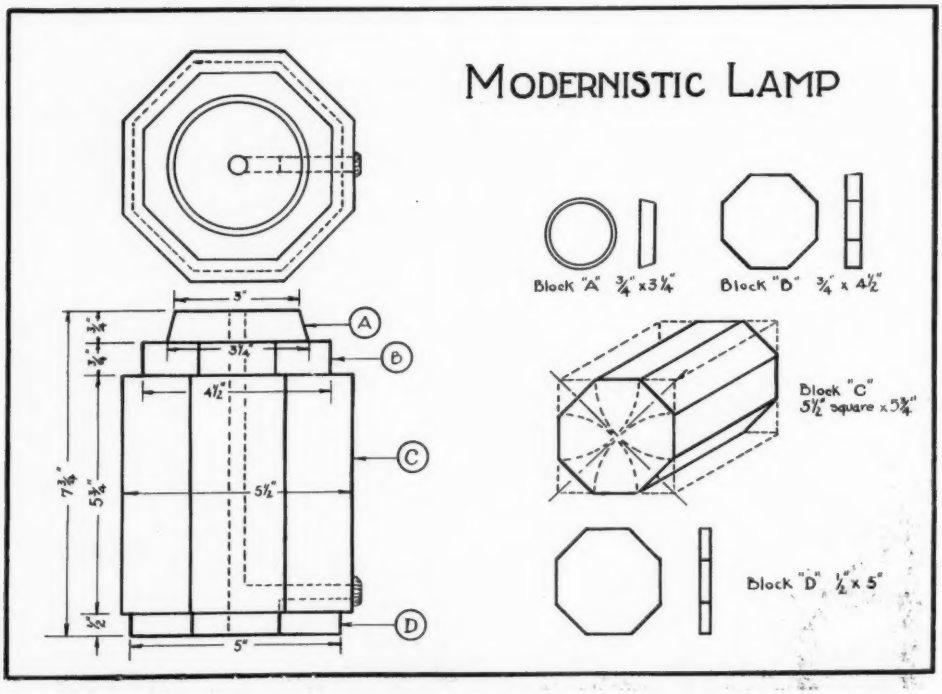
MODEL AIRPLANE

R. B. Newhauser, Milwaukee, Wis.

In the teaching of elementary aeronautics the use of a model helps the student get a more clear understanding of the subject than he would if he merely got a verbal explanation.

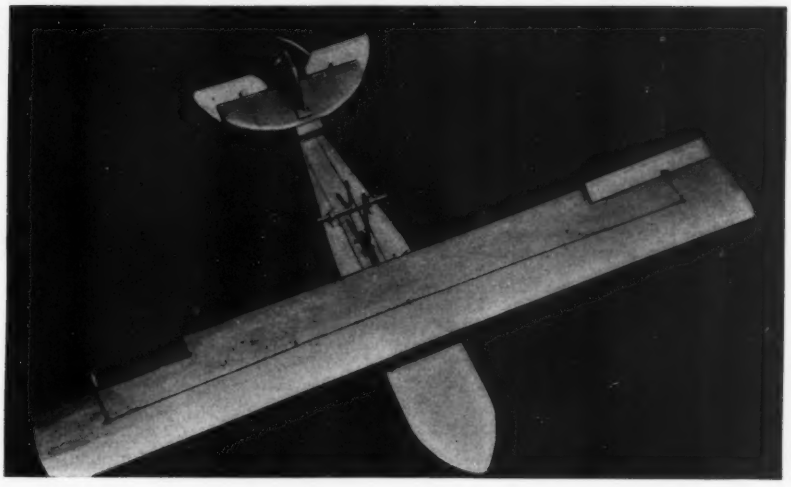
Especially is this true when the controls of the airplane, their operation, and their relative functions are being discussed. The simple working model herewith described, shows the actual working controls which actuate the elevator, ailerons, and rudder.

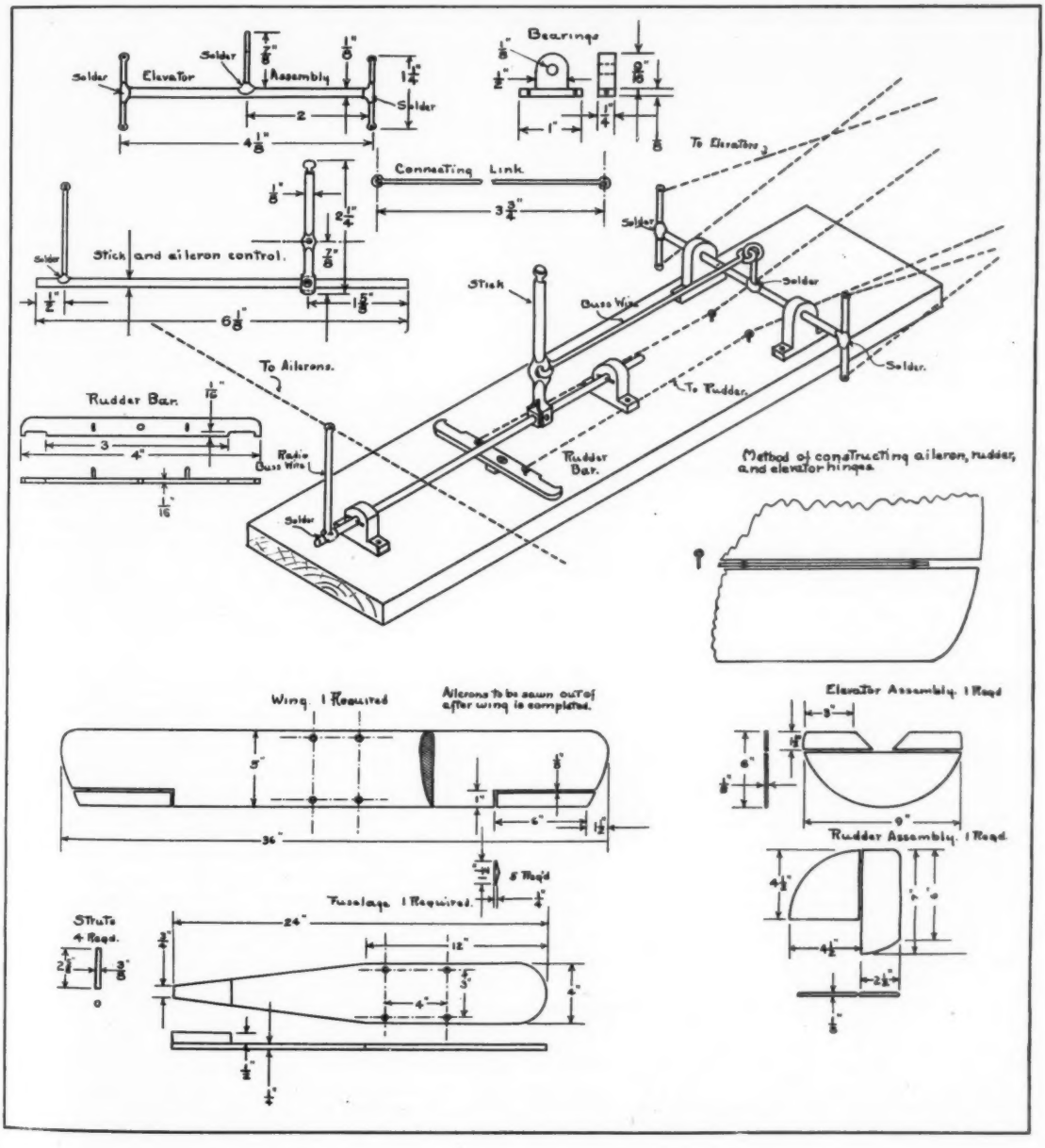
The fuselage, wings, and tail assembly are constructed from any soft wood such as pine or basswood and finished with two coats of shellac. The metal parts are preferably constructed of brass and finished in lacquer.

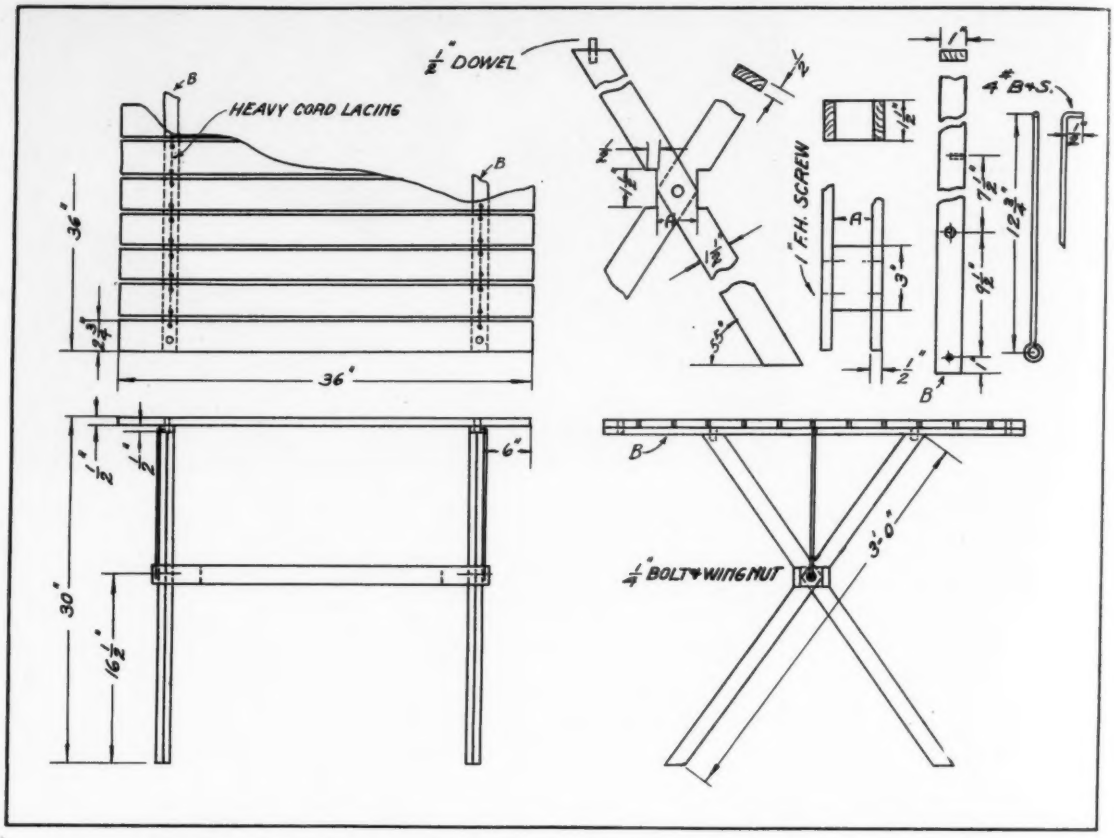


AIRPLANE MODEL

For Studying The Controls and Their Functions. Designed by R. B. Newhauser, Milwaukee, Wis.







FOLDING LAWN OR CAMP TABLE DESIGNED BY GEO. H. WICHMANN, COLERAINE, MINN.

A FOLDING LAWN OR CAMP TABLE

Geo. H. Wichmann, Greenway High School, Coleraine, Minnesota

The problem of the folding camp table is of especial interest because of its unusual construction and assembly. The table was designed for taking down and occupying as little space as possible. It folds into a 36-in. roll and may be taken down or set up in a very short time.

The top which may be rolled, is fastened to supporting cross bars by means of slip dowels. The cross bars fasten to the legs by means of dowels and are held in place by the supporting wire tie rod. The slip joint in the legs automatically fastens the legs to the brace bar when the table is erected.

The accuracy of the layout, variety of tool operations, minimum of materials required, and general interest of the problem make it one especially adapted to the junior-high-school shop.

ATTRACTIVE MIRROR FRAMES

Frederick W. Voss, Late of Waukegan Township High School, Waukegan, Ill.

Today mirrors are used not only for their utilitarian value but also for ornamental purposes. Very often they take the place of pictures and other wall hangings.

An attractively designed mirror may be hung in any room in the house. The design and kind of wood from which it is made should be in harmony with the surroundings in which it is placed.

The mirror illustrated herewith, may be varied considerably to suit the designer's taste. Several variations of it are shown.

In order to employ the best construction methods it is a good plan to make the corner joints of the frame a half lap miter joint, with the miter on the face.

This permits of a fastening which is far stronger than a nailed, plain mitered joint. Then too, the half lap miter joint may be glued and also fastened with screws. A joint so fastened, will withstand any ordinary strain that may be placed upon it.

The ornamental top and bottom may be laid out by means of the rule, square, and divider, or it may be desired to use a paper pattern. To construct a paper pattern for the top, take a piece of paper of the correct width and length. Fold this exactly on the center of the length, being sure that the edges are even. Then start at the fold, and cut out the desired shape. Cut in this way, the two halves of the design will be exactly alike if care has been taken to hold the two halves of the paper firmly.

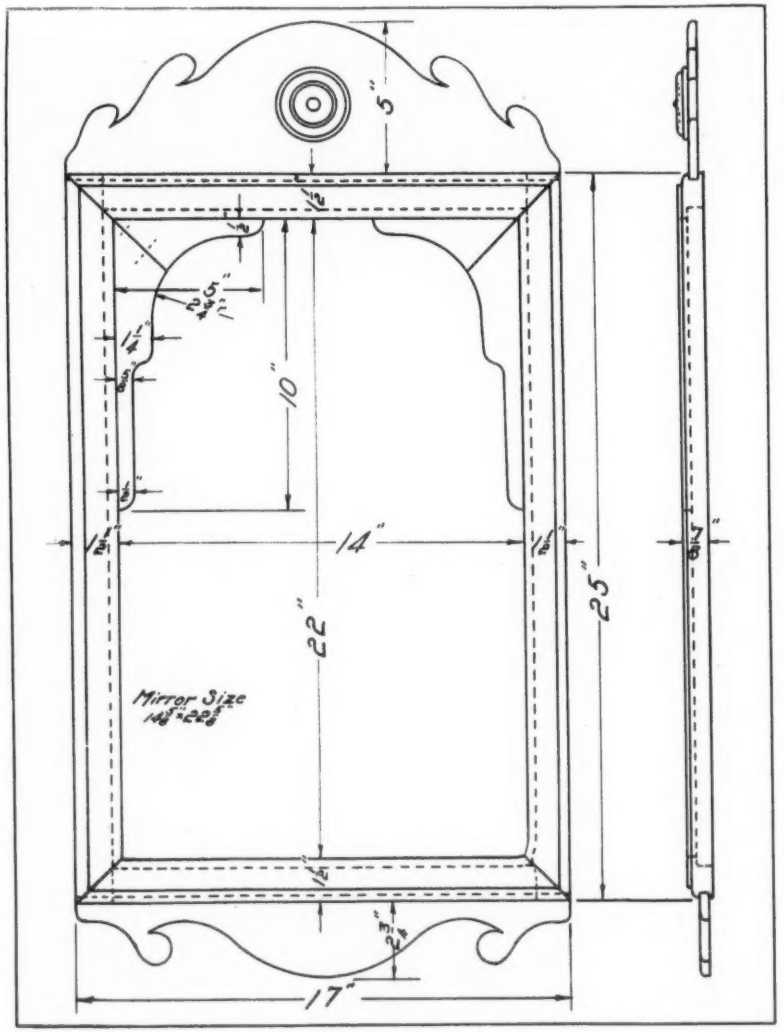
The ornamental corners on the inside are made with a butt miter joint, and glued securely. After they are dry, they are fitted into the corner and glued. If desired, a brad may be added to insure holding them in place.

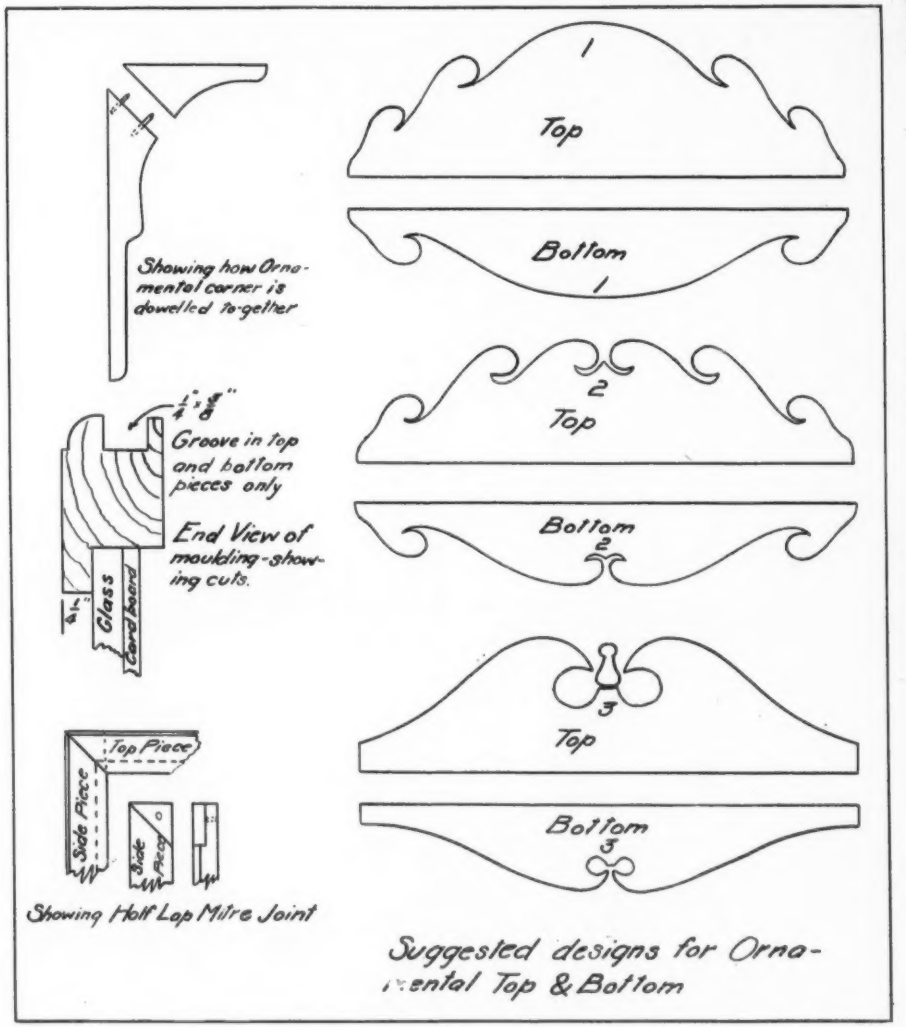
In gluing the stock for making the corners, it is a good plan to drive two brads in the mitered end, permitting them to project ¼ in. or ⅜ in. and sharpening the projecting end with a file. These sharpened brads may be pressed into the second piece of stock by the mere pressure of the hands. In this way the fit may be made very accurate and the placement cannot shift even after the pressure of the clamps is applied to the pieces. A small wood dowel may also be used to fasten them.

The ornamental corners may be placed so the surface is flush with the outside surface of the frame, or they may be placed so that the surface of the corner piece is raised 1/16 in., 3/32 in., or ⅛ in. as may be desired.

Raising the surface of the corner pieces, makes the job a little easier for the less skilled worker, as the joint need not be quite as perfect as where the surface of the frame and the ornamental corner is flush.

The rounded corner around the frame is set back 1/16 in. This may be done with a Stanley No. 55 plane or it may be done on a circular saw, first cutting the amount of set back and then rounding the corner the desired amount with a block plane and sandpaper.





MIRROR FRAMES, FREDERICK W. VOSS, LATE OF WAUKEGAN TOWNSHIP HIGH SCHOOL, WAUKEGAN, ILL.

If desired, a raised design may be placed on the ornamental top, or it may be left plain.

The kind of stock from which the frame is to be made will depend upon the surroundings in which it is to be placed.

These frames have been made by the author from the finest black walnut and mahogany, and also from the cheapest grade of pine and poplar.

In finishing the finer woods a natural finish is very attractive for the mirror frame. For finishing the cheaper woods, the surface of the frame may be painted the desired color and then antiqued, thus making a very attractive wall hanging.

The amount of work required to make one of these frames is negligible when compared with the results obtained. They furnish a problem which is highly recommended for advanced industrial and vocational-school classes, and also for the home workshop.

HOUSEHOLD REMINDER

Harry W. Kroll, Buhl, Minnesota

The project described herewith makes a good assignment for those students who have completed the required number of elementary sheet-metal exercises, and who can be depended upon to do neat and accurate work. The household reminder covers no more than the elementary exercises already completed, but does necessitate a greater degree of accuracy in laying out, cutting, and folding.

The material for this project may be IC tin plate or No. 28 gauge galvanized iron. Tin plate however, is preferable.

Lay out, cut and fold the body to the required size.

Cut two pieces 1⅛ by 8 in. for the pointers. Lay out 16 pointers on each piece and cut out pieces marked *X*. Cut out the pointers as shown in the illustration, leaving enough material to hold the pointers together. On the bar folder set for No. 10 wire, fold and wire the two pieces on 2 pieces of No. 10 wire, 8-in. long. Proceed to snip the remaining material, thereby separating the pointers.

Cut 4 pieces for wire clasps and form to shape as shown.

Smooth the edges of the pointers with a file, and adjust them to turn easily on the wire. Locate the position of the clasps and solder in place.

In finishing this project, the body and one side of the pointers should have the same color, while the opposite side of the pointer should have a color in harmony with the body. As a suggestion, the body color and one side of the pointers may be nile green. The side of the pointer turned to indicate a household necessity should have a color different from the body color. An orange and a green combination is very attractive. The colors used, should depend upon the color scheme in the kitchen.

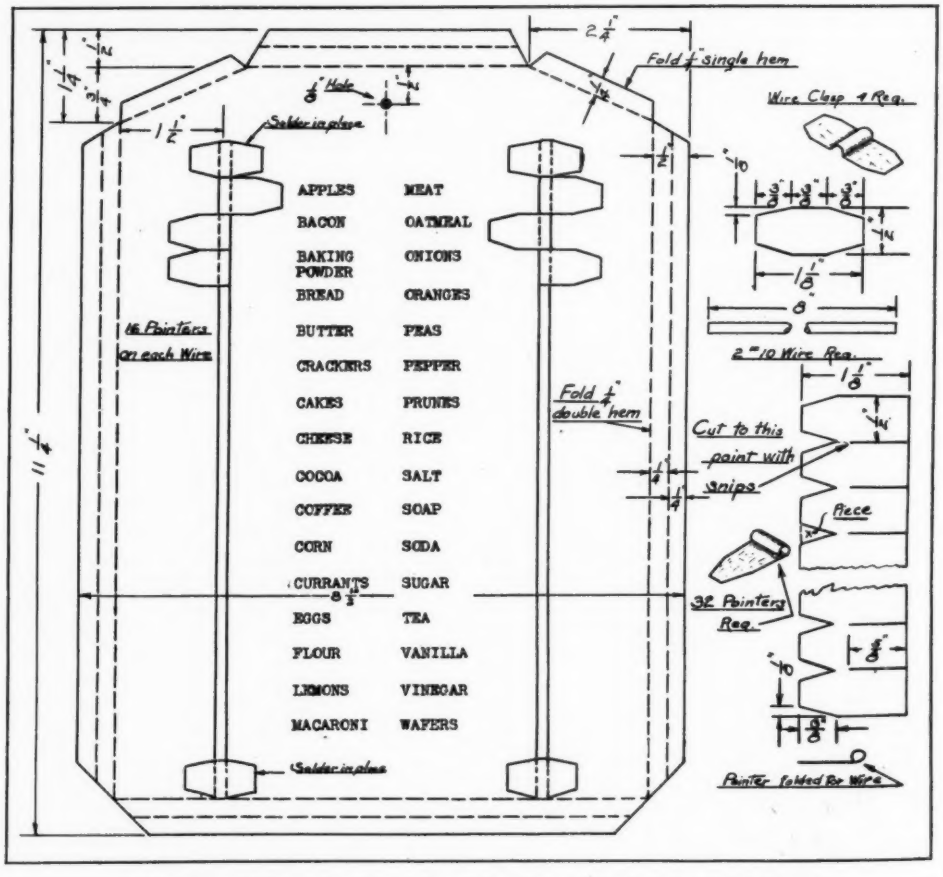
The list of household necessities may be lettered or typewritten on white paper and glued in place.

A TOOL CABINET FOR THE FARM SHOP

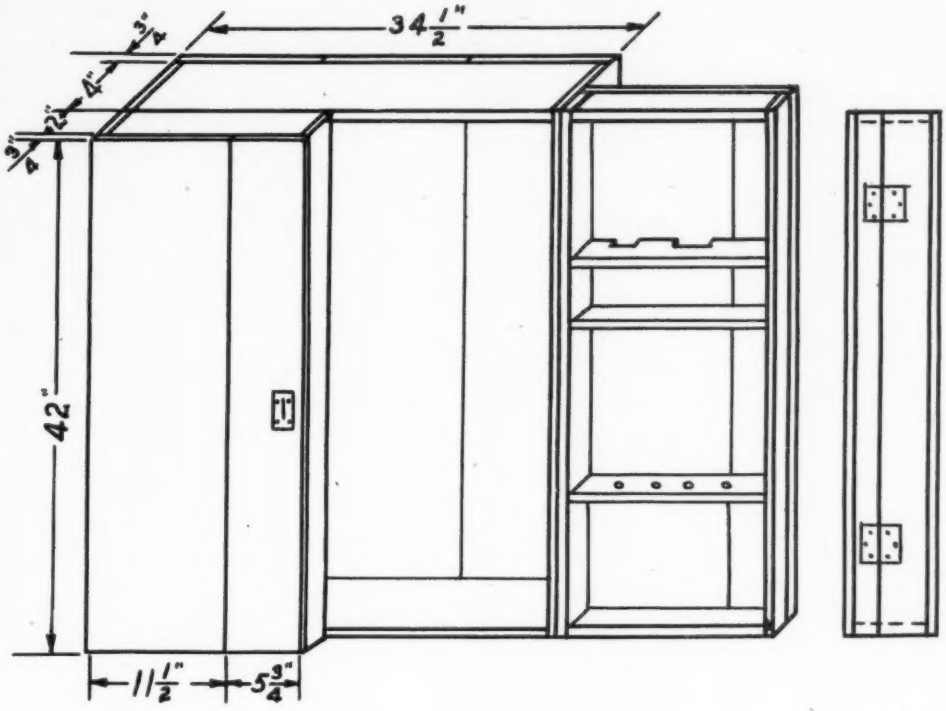
M. F. Thurmond, A. and M. College of Texas, College Station, Texas

On every farm there should be some kind of a tool cabinet in which the tools may be kept. Tools that are hung on the walls or laid on the bench soon become rusty and dull.

The cabinet as shown in the drawing has many advantages over a tool box. It can be placed above the workbench, where it is out of the way. The tools may be removed instantly and replaced with ease. Each tool can be indicated with a silhouette painted on the back of the cabinet. The picture of the tool then serves as a reminder that the tool is out of place. When not in use, the cabinet can be kept closed and locked if necessary.



HOUSEHOLD REMINDER DESIGNED BY HARRY W. KROLL, BUHL, MINN.



FARM SHOP TOOL CABINET

Bill of Material

2 pc.	1 x 6 x 42	Sides
2 pc.	1 x 6 x 33	Top and Bottom
5 pc.	1 x 12 x 42	Front and Back
2 pc.	1 x 6 x 42	Front
2 pc.	1 x 2 x 41½	Inside of Door
3 pc.	1 x 2 x 15¾	Tool Rack for Inside

AUTO-MECHANICS TEST

W. G. Hjerstedt, Roosevelt High School, Chicago, Illinois

General Directions. The aim of this examination is to give you an opportunity to show what you have learned from your study of the auto-mechanics course. It is not expected that you will be able to answer every question. Read the directions and every statement carefully and be sure you understand what you are to do before you begin.

Name..... Room.....
Course..... Age..... Date.....

Specific Directions. Some of the statements, in that which follows, are true and some are false. Read each statement carefully. The words True and False precede each of the statements. Underscore the word True if the statement is true. Underscore the word False if the statement is false. Do not guess at a question you are sure you do not know. If you are unable to decide whether a statement is true or false, leave it alone. You will be penalized for each statement incorrectly marked by deducting one point of credit from the number of correctly marked statements.

True False 1. When carbon knock returns after 200 miles, after carbon removal, noise is caused by peculiar mixture due to wrong carburetor being on the car.

True False 2. Main bearing knock is due to muffler bracket bolt missing.

True False 3. New inner springs should be installed on valves when a knock is heard at high speed in valve mechanism.

True False 4. Continued burning out of one connecting rod bearing may be due to oil groove in bearing not meeting the supply hole.

True False 5. Water leaking from water pump may cause squeaking valves.

True False 6. Low oil pressure may be due to worn out plunger in regulator.

True False 7. To avoid timing gear knock remove washer on each bolt.

True False 8. It is never necessary to check radiator and water pump when engine is overheated.

True False 9. When you find two dead-cylinders after grinding valves, time carburetor, check ignition and compression, and replace spark plugs.

True False 10. Replenish grease in rear axle when steel cable of shock absorber rubs the shock absorber case.

True False 11. Check transmission, springs, clips and shackles when rattle is heard under car.
True False 12. Car would not start in cold weather due to choke tube slipping in bracket causing butterfly to remain open.
True False 13. Backfiring is caused by hot box resting on generator.
True False 14. Improper traction of fan belt may cause whistle in clutch.
True False 15. Enlarge holes in plates when plates are found to bind due to expansion of driving studs.
True False 16. Tighten motor support bolts when a click in rear axle is heard.
True False 17. A sound like a flat tire may be due to loose front flywheel.
True False 18. Adjust shock absorbers when brake drums are drawn too thin.
True False 19. Tighten motor support bolt when front shackle bolt squeak is heard.
True False 20. Install new tire valves when brake drums are worn too thin.

Checking List

True, Nos. 1, 3, 4, 6, 9, 11, 12, 15, 17, 19.
False, Nos. 2, 5, 7, 8, 10, 13, 14, 16, 18, 20.

CLASSIC CARVED DESIGNS

Franklin H. Gottshall, Director of Industrial Arts, Mount Berry College, Mt. Berry, Ga.

Carving has been employed by craftsmen since the beginning of history as a medium of decoration for furniture and objects of art. By making use of it in a conservative way, things of beauty can be made from even such ordinary materials as a block of wood. As a medium of expression for the craftsman the art of wood carving has few if any equals. It is a pleasant pastime and can be made a profitable avocation.

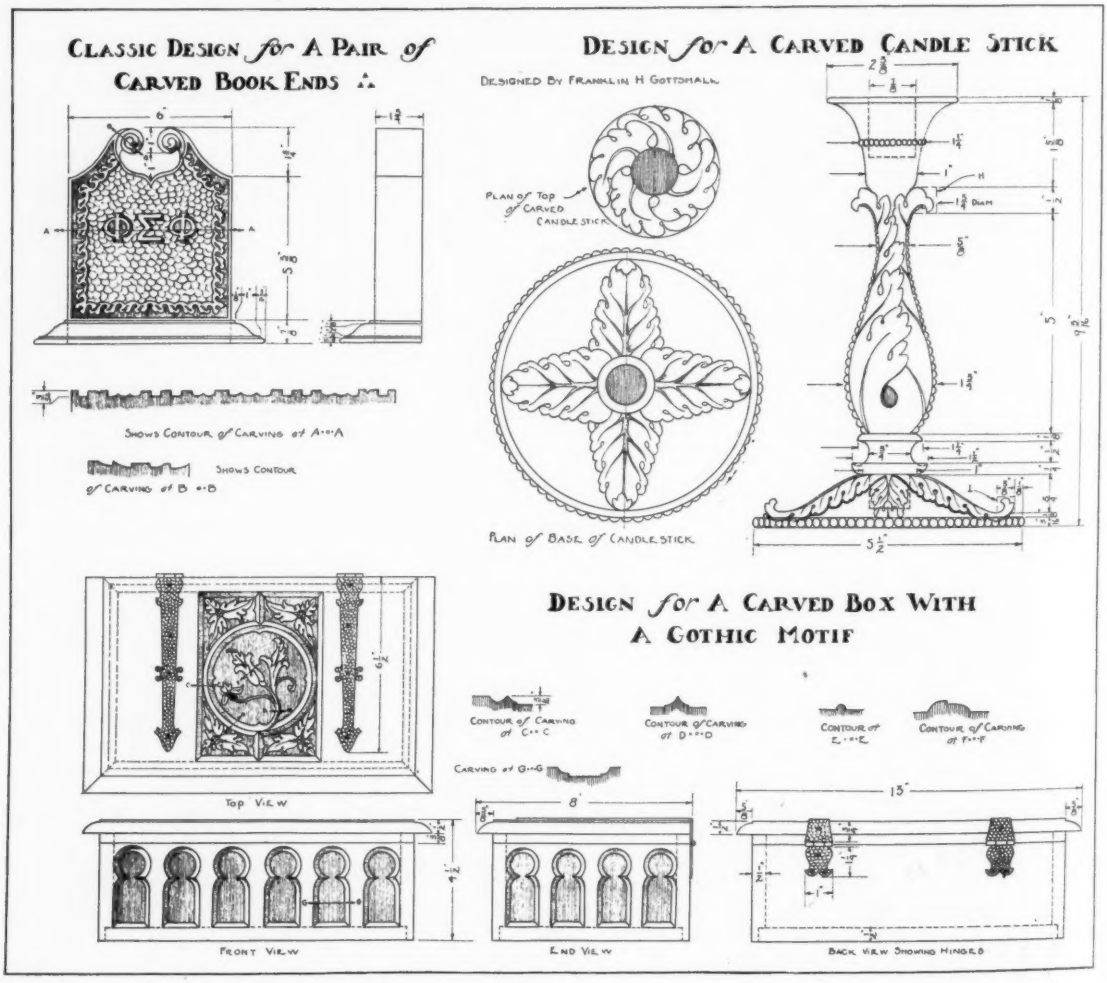
In order to do it with any degree of success one should have a good sense of modeling. To a few people this sense of form comes naturally and their progress in the art is rapid. Others can acquire it through painstaking practice.

All the objects illustrated in this article, are simple things and owe most of their beauty to being carved. They are only suggestions of what can be done. The book ends are perhaps the simplest to carve since very little modeling has to be done. A flat gouge, a ¾-in. and a ⅜-in. straight carvers chisel are about all the tools necessary to make them. The design is first drawn on a piece of paper and then by means of carbon paper, transferred to the blocks which have been cut to shape beforehand. The background for the letters is gouged out to resemble a surface somewhat similar to that of hammered copper or brass.

The small box has many interesting possibilities. The author has made and carved several similar to the one shown.

The hinges are not difficult to make. They are sawed out of a piece of sheet brass or copper (about No. 16 gauge) with a jewelers saw. For those who do not want to attempt the hinges an easier way is to use common brass butts, ½ by 1 in. and take the pieces of hammered brass and butt them against the barrel of the hinge. This is just as good as making the entire hinge and a great deal easier.

The modeling in the box is quite well explained by the diagrams; C, C; D, D; E, E; F, F; G, G. However, it is necessary in this as in all carving to let the craftsman work out the form for himself, more or less.


CLASSIC DESIGN for A PAIR of CARVED BOOK ENDS
ΦΣΦ
SHOWS CONTOUR of CARVING at A-A
SHOWS CONTOUR of CARVING at B-B
DESIGN for A CARVED CANDLE STICK
DESIGNED BY FRANKLIN H GOTTSHALL
PLAN of TOP of CARVED CANDLE STICK
PLAN of BASE of CANDLE STICK
DESIGN for A CARVED BOX WITH A GOTHIC MOTIF
CONTOUR of CARVING at C-C
CONTOUR of CARVING at D-D
CONTOUR at E-E
CONTOUR of CARVING at F-F
CARVING at G-G
TOP VIEW
FRONT VIEW
END VIEW
BACK VIEW SHOWING HINGES

The author further decorated the boxes he made, by the careful use of colored bronze paints, and colors ground in oil such as are used to tint paint. These were put on after the box had been stained and given one coat of shellac, and were applied very sparingly, mostly in the background. They were then given a few coats of varnish and rubbed to a dull gloss finish.

The candlesticks are perhaps the most difficult to carve, because here the acanthus leaves cling and curl about a curved surface. The base and stem are turned separately and are carved before being glued together. Care should be taken to leave enough wood at *H* and *I* so that the tips of the leaves can be made to curl.

All the pieces here shown should have green felt glued to the bottom so they will not scratch a surface upon which they may be placed. The book ends should be weighted with lead before this is done.

BOSTON VOCATIONAL SOCIETY MEETS

The Vocational Education Society of Boston held its regular monthly meeting and luncheon on Saturday, April 13, at the Hotel Westminster, Boston, Mass.

The different places to hold the May outing were discussed.

A representative from the Boston Central Labor Union was asked to talk to the members. However, through some misunderstanding, the speaker did not arrive and the organization was left without a regular speaker.

Led by President Babb, an informal discussion was held on the relation of labor to education. Professor Blair, of Boston University, told of his experiences with the rehabilitation of ex-service men. He was strong in his praise of the way in which the labor unions stood by their agreements with the school officials in spite of business depressions, strikes, and other handicaps as compared with some of the manufacturers.

Mr. F. P. Coates of the state board of education spoke briefly on the policy of the state department in cooperating with labor organizations. He said that in most cases there were agreements between the schools and the labor unions carried on by the individual departments of the school. In many cases training received in the schools is credited toward advanced apprenticeship rating. But one of their problems is to have credit given for related work in the schools.

The subject of vocational guidance was brought up by Mr. Fred Chandler of Salem. Mr. Moore of Boston pointed out the difficulty of placing graduates from schools in the colored districts in satisfactory positions because of their color. It seemed that their only chance of success was in starting small shops of their own in their own district.

The meeting adjourned at 2:30 p.m.—*Louis A. Van Ham.*

THE INDUSTRIAL ARTS ASSOCIATION OF PITTSBURGH AND VICINITY

This association is composed of 180 trade and industrial-arts teachers of the Pittsburgh school system and of the neighboring cities and boroughs.

Luncheons are held monthly in the evening, between the hours of five and seven o'clock, and speakers from various occupations and industries address the meetings. The control of the association activities is vested in a board of six directors, representing the senior high school, the junior high school, the trade, the continuation and elementary schools, with one director representing the districts in the vicinity of Pittsburgh. The officers are:

President, M. A. Fox, Latimer Junior High School; vice-president, Jay D. Fogg, Allegheny Vocational School; secretary-treasurer, Mary C. Hutchinson, Arsenal Vocational School. The directors are: E. D. Hoyt, Peabody High; Alexander Coghill, Latimer Junior; Leon Hass, Daniel Webster Vocational School; Charles Sylvester, North Continuation School; John A. Ingram, Brookline School; and Leonard D. Koch, East Pittsburgh Junior High School.

MARIUS A. FOX
President of the Industrial Arts Association of Pittsburgh and Vicinity.

In addition to the regular meetings, one social event during the winter is held, and at this meeting the members are privileged to bring their wives. The spring picnic and the autumn corn roast are two important events also in the year's work.—*George C. Donson.*

THE MANUAL ARTS CLUB OF PEORIA

The Manual Arts Club, of Peoria, Illinois, is composed of men of Peoria and vicinity, who are following the profession of industrial education. It is somewhat unique in character, in that there is no president, no treasurer, and an absence of the customary club dues. The work of the organization is in the hands of a program committee consisting of five members, two of whom are replaced each semester so that the duties do not fall as a burden long upon a very few. From this committee a chairman is appointed, who presides at all the meetings, and a secretary sees that notices of meetings are sent out and reservations for the supper, which is a part of the program, are made. Collections for the supper, together with an occasional donation for postage are received by the secretary, after the supper, and all bills are paid promptly.

Meeting places for the club have been as varied as possible and speakers for the most part have been found within the group. In an organization of this kind one man may excel in a certain kind of work, or may have some hobby or avocation of peculiar interest, and this exchange of viewpoints and ideas has done much toward building up a spirit of fellowship, and has proved a real source of benefit, as well as pleasure, to the men of this vocation within the community. The club is particularly fortunate in having among its members such men as Mr. Charles A. Bennett, Dr. Bawden, and Prof. A. F. Siepert, the new President of the A. V. A., as well as other representative men of the Bradley faculty and the city-school system.

Meetings are held monthly, usually the last Friday of the month, the February meeting having been held at the Endres Hotel, Peoria, Friday, February 22, at which time a discussion relative to new methods of patternmaking was led by Mr. Harry S. Clark, recently appointed head of the woodworking department of Bradley Institute, to fill the vacancy caused by the death of another of our members, Mr. E. A. Johnson. Mr. Clark pointed out the changes in types of construction and methods which have practically revolutionized patternmaking in the last decade, showed how die casting had superseded the old style, and how the machinist and acetylene welder had affected the trade, but stressed the fact that

patternmakers of a higher order are needed, though not in such numbers, through the advent of a new type of patterns demanded by the industrial world of today.

The January meeting was of interest to a large group of men, who gathered to hear Mr. Siepert relate his experiences and make a report of the national meeting of the American Vocational Association held in Philadelphia shortly before the holiday season.

Being conducted in such an unusual manner and meeting with such success as has been ours during the past two years we have felt that perhaps other groups of men interested in the same line might be interested in knowing of this live and going organization.—*Frank E. Hardin.*

The Manual Arts Club of Peoria, Ill., at a meeting held on March 23, discussed the problems of the European pioneer in industrial education. Mr. C. A. Bennett of Peoria, was the leader, who brought to his audience a discussion of former problems, as well as those which confront the teachers of today. Mr. Bennett divided his subject into sections devoted to types and processes, working for money, schools leading the industries, and selection instead of guidance. Elaborating upon his topics, he showed the development of industrial arts in the Prussian system, the rise of Swedish sloyd, and the establishment of industrial schools in France following the industrial revolution and the elimination of the craft guilds.

The April meeting of the club will discuss aviation, and the last meeting in May, will take up the topic of motor boats and motor boating.—*F. E. Hardin.*

MEETING OF THE SOUTHERN ILLINOIS MANUAL ARTS ASSOCIATION

The Manual Arts Association of Southern Illinois held its annual spring meeting on March 23, at Carbondale, Ill. The meeting proved the most interesting of any thus far held.

Mr. C. L. Peterson, director of manual arts at the Carbondale Normal University, led the discussion during the first part of the program, speaking on "The Reorganization of Methods Demanded by Large Classes." He stressed the reorganization of methods of teaching, methods of preparation, instruction sheets, demonstrations and laboratory work.

Mr. Floyd Smith of Benton, the second speaker, took the topic "Vocational Guidance in Southern Illinois," tracing the past progress, possibilities, and needs in this work. He described briefly the work being carried on in the Benton High School and showed that there was an urgent need for an organized effort to help boys and girls of high-school age in finding the work for which they are best fitted. Methods of guidance and counselling were discussed by the members.

The group visited the building under construction which is to house the manual-arts department and shops. Many features of the work of the students were on exhibition in the display cases.

In the afternoon the group discussed the topic, "What Material is of Most Importance in Arranging the Outlines of Woodworking Courses in the High School?" and "What Proportion of Time Should be Spent on Textbooks and Mechanical Drawing?" The discussion brought out a number of interesting facts and a wealth of valuable material was gathered from an exchange of ideas and experiences of the members.

The meeting closed with a summary of the day's proceedings by Mr. H. W. Harmon of Sparta.

The next meeting of the association will be held in December, at Centralia.—*H. D. Fortney.*

California Vocational Association (Bay Section) Holds Meeting at San Jose.

The California Vocational Association of the bay section held its annual meeting on March 16, at San Jose, Calif. Mr. Robert Gilbert presided at the sessions in the College. The members in attendance represented thirteen counties surrounding San Francisco Bay, who are engaged in industrial education, vocational education, homemaking, part-time, or commercial training. Among the topics for discussion at the meeting were the following: Placement and Follow-up of Commercial Students; Vocational Homemaking Projects; Individual Instruction Sheets for Industrial Arts; Part-time Education—The Boy and the Job; Vocational Guidance from the Viewpoint of the Shop Teacher; Cooperative Education; What May the Vocational Teacher Expect in the Future. An exhibit of projects was held in one of the rooms of the homemaking building.

Industrial-Arts Teachers of Southeastern North Dakota Hold Meeting.

The industrial-arts teachers of the southeastern section of North Dakota held their annual meeting on March 22, at Wahpeton. An interesting program was given, with Mr. Ben H. Barnard, of Wahpeton, presiding.

At the meeting, the following officers were elected for the year: President, Mr. M. W. Heckman, Ellendale; vice-president, Mr. George F. Billey, Valley City; secretary-treasurer, Mr. Walter C. Netwal, Wahpeton.

Illinois Vocational Society Will Hold Meeting at Chicago.

The meeting of the Illinois Society for Vocational and Practical Arts Education will be held November 1 and 2, at the Hotel Sherman, Chicago, Ill. The Illinois Home Economics Association will hold a meeting at the same time, and the two organizations will have one or two joint sessions.

THE LANSING CONVENTION

The convention of the Michigan Society for Manual Arts and Industrial Education, was held from Thursday, April 25 until Saturday, April 27. The registration of almost 400 exceeded any other state convention so far held, and compared favorably with those held in much larger territories. All meetings as well as the equipment exhibit were held in the Olds Hotel.

Among the more important speeches were those given by Frederick E. Searle, superintendent of the Henry Ford Trade Schools in Detroit; Martin DeGlopper, state highway commissioner; Harvey H. Lowrey, superintendent of the Fordson public schools; Marshall Byrn, head of the manual-arts department of the University High School, Ann Arbor; Dr. Wm. T. Bawden, editor of the Manual Arts Press, and Dr. Paul Voelker, president of Battle Creek College.

The subjects which the aforementioned speakers chose for their addresses were as follows: The Henry Ford Trade School Apprentice System; The State Highways; The Forward-Looking Education; Visual Instruction in Modern Education; Some Factors for Judging the Qualities of Shop Teachers; and The Adolescent Boy.

The following round-table conferences were held: Printing, led by E. H. Streeter, Highland Park, Mich.; Auto Mechanics, by E. H. Kelsey, Saginaw, Mich.; Mechanical Drawing, by Frank Kepler, Detroit, Mich.; Household Mechanics, by John L. Weimar, River Rouge; Machine-Shop Practice, by Joseph Bicknell, Muskegon; Manual Arts in Consolidated Schools, by O. W. Troutman, State Normal College, Mount Pleasant, Mich.; Related Trade Subjects, by G. Raymond Tuttle, Lansing; Woodworking, by John R. Jensen, Grand Rapids, Mich.; Coordinating Problems in the Part-Time School, by J. B. Mott, Kalamazoo, Mich.; and Senior Trade Schools, by Geo. B. Frazee, Grand Rapids.

The following officers were elected for the ensuing year: President, George B. Frazee, Jr., president of the Vocational and Technical High School, Grand Rapids; vice-president, A. C. Tagg, Fordson; secretary-treasurer, Earl L. Bedell, Detroit.

A vote of thanks was extended to Harold Van Westrienen of Hamtramck, the past president; to G. G. Price of Battle Creek, the past vice-president; and also to E. M. Hall of Lansing, who acted as local chairman at the convention.

It was voted that the 1930 convention be held at Grand Rapids.—*Earl L. Bedell.*

REGIONAL CONFERENCE

The twelfth annual Regional Conference on Trade and Industrial Education was held on April 23 to 26, 1929, at Milwaukee, Wis. A representative gathering of state supervisors, directors of vocational education and teacher trainers from the following states attended: Washington, D. C., Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Nebraska, North Dakota, South Dakota, and Wisconsin.

The Conference was conducted by C. E. Rakestraw, regional agent, Federal Board for Vocational Education. Most of the meetings were held at the Milwaukee Vocational School. The discussions centered about the following topics: The organization of advisory committees consisting of men from the industries and how to get them to function properly; the duties of local directors in charge of vocational and industrial-arts education; how to get industrial work for trade training classes; how to prepare the girl wage earner for her employment; the setting up of standards for part-time unit trade and evening schools; the training of teachers in service; the use of the instruction sheet; and the training of teachers for evening classes.

Among the speakers on the program were the following: Geo. P. Hambrecht, state director for vocational education, Madison, Wis.; R. L. Cooley, director vocational education, Milwaukee, Wis.; W. C. Sieker, assistant director of the Milwaukee Vocational School; E. E. Gunn, Jr., supervisor of industrial education, Madison, Wis.; Dean M. Schweickhard, state supervisor of industrial education, St. Paul, Minn.; George B. Brace, supervisor of industrial education, St. Paul, Minn.; Laurence Parker, assistant state supervisor and teacher trainer, Topeka, Kans.; Frank J. Weber, secretary, Federated Trades Council of Milwaukee; and E. W. Schultz, president of Wisconsin State Board for Vocational Education, Madison.

ANNOUNCE U.T.A. CONFERENCE AT CARNEGIE INSTITUTE

The officers of the United Typothetae Conference have announced the tentative program for the meeting to be held June 24 to 26, at Carnegie Institute, Pittsburgh, Pa. Dean Connelley of Carnegie Institute will preside at the Monday morning session, and addresses will be made by Supt. W. M. Davidson of Pittsburgh, Dr. J. Horace McFarland of Harrisburg, and Mr. Allen Robinson of the Mergenthaler School of Printing of Baltimore. At the afternoon meeting, the speakers will be Mr. J. L. Frazier, Mr. D. Loren Davis, Mr. J. Henry Holloway, and Dr. Walter B. Jones of the University of Pittsburgh.

Mr. Ira D. Pilliard of the Milwaukee Vocational School will preside over the Tuesday morning session. Addresses will be given by Dr. William T. Bawden, Mr. Frank Cushman, Prof. A. M. Goldberger, and Mr. Otto L. Fuhrman. On Tuesday evening Prof. David Gustafson will preside at the fellowship smoker, at which time three printing educators recently returned from a European trip, will give their impressions of printing on the Continent. The speakers are Mr. Hugo Jahn, of Wentworth Institute, Boston; Mr. Logan Anderson, Lakeside Press, Chicago, and Mr. M. K. Dutton of the Carnegie Institute.

Mr. Edwin H. Stuart of Pittsburgh will open the Wednesday morning meeting with an address on "Making Type Talk." Mr. Stuart will be followed by seven teachers and supervisors of printing who will talk on topics of particular interest to teachers. In the afternoon, the main address will be given by Dr. Don H. Taylor of New York University. The chairmen of the sessions will be Mr. John S. Reinike and Mr. W. C. McCain. There will be a mock trial, presided over by Mr. E. E. Sheldon, at which evidence will be presented concerning the value of printing.

In addition to addresses and discussions, there will be a number of exhibits of interest to teachers of printing.

THE EASTERN ARTS CONVENTION

The twentieth annual convention of the Eastern Arts Association took place in the Hotel Pennsylvania, New York City, April 2, 3, 4, and 5. In former years, it has been the practice to open the convention with a general session on Wednesday evening and close with a general session on Saturday morning. This year a new plan was tried out with a view of making attendance at the convention less strenuous. All the evening general sessions, as well as the Saturday morning session, were eliminated, which proved a fine arrangement.

The first session was called by the president, Erik A. Andersen, on Tuesday afternoon. Dr. W. H. Kilpatrick, professor of education, of Teachers' College, the first speaker, took the topic "Some Basic Considerations Affecting Success in Teaching." He was followed by Mr. Leo Katz, artist and lecturer of New York University and the Metropolitan Museum of Art.

A general session was held on Wednesday afternoon, with Mr. Gerrit A. Beneker, artist, taking the topic "Art, Industry, and Education." Miss Grace Cornell, stylist for L. Bamberger and Company, Newark, N. J., and lecturer for the Metropolitan Museum of Art, New York City, spoke on "The Teaching of Art in the Machine Age."

At the Friday morning general session, addresses were made by such well-known educators as Dr. J. L. Tildsley, district superintendent of schools, New York City; Dr. A. B. Meredith, state commissioner of education for Connecticut; and Dr. E. C. Broome, superintendent of schools, Philadelphia, Pa.

The Sectional Conferences

Sectional meetings were held on Wednesday and Thursday morning. Mr. E. S. Whitcomb, specialist in home economics for the Bureau of Education, Washington, D. C., was chairman of the home-economics group, Prof. S. A. Tanahill, of Teachers' College, of the fine-arts group, and Mr. L. W. Wheelock, director of vocational education of Hartford, Conn., chairman of the manual-arts and vocational group. Many specialists in industrial and fine-arts education addressed the sectional conferences.

Commercial Exhibits

The exhibits were not only commercial, but educational in every sense of the word, and were attractively arranged. There were 42 exhibitors, every unit of space being taken. The exhibit hall adjoined the ballroom where the general sessions were held, which arrangement proved very satisfactory.

The Ship's Dance

Tha dance which took place on Wednesday evening, is an annual event of the Eastern Arts Convention, and is looked forward to by all the members with pleasure. Mr. Waldo C. Wright, educational director for Henry Disston & Sons, and captain of the "Ship" had a very able crew to help him make his "Ship" a winner. Of course, Pirate Frank Mathewson was there, together with his honor, President Erik A. Andersen.

The Get-Together Luncheon

This annual luncheon took place on Thursday and as usual proved an enjoyable affair. The School Art League of New York City, acted as host. Many alumni, state, and association groups, had an opportunity to meet old friends and have luncheon together.

The Art Exhibits

An exhibition of industrial and fine-arts work of the elementary junior high, and senior high schools of New York City, was held at the American Museum of Natural History. This exhibit which represented the high spots of the work in over 600 schools, included furniture, art metal work, jewelry projects, toys, and fine-arts work.

An interesting art appreciation exhibit was held at the Metropolitan Museum of Art. Here the art departments of Bay Ridge, Bryant, and Bushwick High Schools, in Brooklyn, displayed problems in the art appreciation course. The New York School of Fine and Applied Art, Pratt Institute, and the New York School of Applied Design for Women, all had exhibits. Lord and Taylors, a leading New York department store had a special exhibition of examples of the newest modern furniture and fabrics, together with a group of modern decorative accessories.

Through the courtesy of the Metropolitan Museum of Art, the industrial-arts exhibit was held open an additional week for the benefit of those attending the Eastern Arts Convention. All of the exhibits and trips made attendance at the convention this year, particularly attractive and the various committees in charge deserve the highest praise for the manner in which this part of the program was conducted.

The Annual Banquet

The banquet which took place in the ballroom of the Hotel Pennsylvania on Friday evening, took the form of a dinner dance, and was a fitting climax to a successful convention. At the conclusion of the dinner, Mr. Frank Alvah Parsons,

(Continued on Page 36a)

Rewinding A.C. Motor

871. Q.: I have a ¼ horsepower, single phase, 60 cycle. 110-volt a.c. motor. I have used it for years in another locality. Here, however, I find I have a 50-cycle current and my motor, of course, cannot be run on this current.

I would appreciate your giving me instructions about rewinding this motor, or where I may get such information. I would like to do it myself for the experience in my own shop.—*J. H. P.*

A.: To rewind your ¼ horse-power motor which was originally wound for 60 cycles and which you now want to use on a 50-cycle current, the number of turns in all of the field coils must be increased in the ratio of 60 to 50. If this is not done, running your motor on the 50-cycle current would unduly heat up the iron field cores.

It may become necessary that you will have to reduce the size of the wire because your space for the coils may be very restricted. At any rate, your speed and the power capacity of your motor will be reduced no matter what you do in the ratio of fifty to sixty.

Polishing Marble

872. Q.: Recently you published in Questions and Answers, an article relative to the cleaning of marble. Efforts on my part to make this article have proved unsuccessful. I have a small marble slab on which I wish to restore the original polish.—*H. D. C.*

A.: The article to which you refer evidently was published on page 320 of the August, 1927, issue of the INDUSTRIAL-ARTS MAGAZINE. The different ingredients mentioned in that article are obtainable from any wholesale drug house. Of course, the article describes only how to remove oil from marble. It says nothing about repolishing.

To restore the polish on marble that is badly worn, rub water and coarse sand over the marble, using a block of iron for the rubbing. Then follow by rubbing with a finer sand and still a finer sand, and finally with fine pumice stone. The final polish is put on by rubbing with putty powder.

Finishing Red Cedar

873. Q.: Will you please give me directions for filling and polishing red cedar?—*B. P.*

A.: For filling, use stick shellac which can be obtained in colors to match the sapwood and the heartwood of the red cedar which you have used for your project. This shellac is burnt in with a soldering copper. Be careful not to overheat the shellac. The holes should be filled so that the shellac projects a little above the wood.

When it has cooled it can be cut down with a sharp chisel and then carefully sanded with No. 0 sandpaper on a block, until the shellac is level with the wood. Do not use too much pressure while sanding, otherwise the shellac may become partially melted and cause a smear.

Several good coats of a good grade of varnish may then be used for finishing, the successive coats being lightly sanded with split 6/0 paper. The last coat should be rubbed with pumice stone, felt pad and water.

Repairing Broken Mirrors

874. Q.: I have a large broken mirror, which I am desirous of keeping. Could you give me information of any company that can repair this so the crack will not show. Or is there any material I can get and repair the mirror here in our school shop?—*E. D. F.*

A.: Bric-a-brac can be quite successfully repaired with Du Pont Household Cement. It comes in small tubes, and is manufactured by the E. I. Du Pont Household Cement Co., Wilmington, Del. The directions for use are on the tube.

We do not know of any firm which makes a specialty of repairing broken mirrors.

Repairing Glass Aquariums

875. Q.: Can you give me any information as to material and procedure in the repairing of a glass aquarium which has been cracked and leaks?—*M. M. K.*

A.: There is not much that can be done in repairing cracks in glass. You might try spraying or brushing colorless lacquer over the portion around the crack and put on sufficient successive coats to make the crack watertight. If you have some of this lacquer in your shop, it will not be very difficult to try out this experiment.

Cutting Glass Bottles

876. Q.: In an article published in the September, 1928, issue of the INDUSTRIAL-ARTS MAGAZINE, entitled "How to Make Lighting Fixtures from Bottles" it tells how to cut bottles. We have tried several times with no results. The bottles didn't even break.

We used the cheapest grade of motor oil. What kind of oil do you use?—*M. E. D.*

A.: The cutting of bottles as described in the article on lighting fixtures works all right with almost any kind of oil. Probably you did not have enough heat in the rod. We have found that the best thing to do is to take as large a rod as the neck of the bottle permits, and to heat it to a bright red heat.

Of course, you have to be careful not to touch the neck of the bottle with the rod when you're pushing it down to the oil, otherwise the glass may crack before you get the rod into the oil. Then too, the quantity of the oil in the bottle may have something to do with the success or nonsuccess of the scheme, because a small quantity of oil heats up much more rapidly than a large quantity.

But the system works. — We tried it on bottles made of rather thick glass. The only time we failed was when we tried it on test tubes made of exceedingly thin glass which, no doubt, had been well annealed. With ordinary bottles such as olive, pickle, and wine bottles, we had very good results.

Finishing Laminated Work

877. Q.: I have been combining white holly and ebony with other woods for different novelties, but find it is rather difficult to finish the project without discoloring the white holly. What finishes would you recommend for such laminated work, and still retain the natural colors of the various woods?—*J. W. K.*

A.: The use of white holly with other woods that need staining, requires a method similar to that used when inlaying. Before applying the stain, cover all the white holly parts with a light coat of white shellac. After this is dry, the stain can be applied without fearing that the white holly will be discolored.

Of course, you have to be careful when you apply the shellac. If any of this comes on the wood which should be stained later on, you will have to remove the spots with alcohol, otherwise the stain will not take.

A Syllabus on Vocational Guidance

By Verl A. Teeter. Cloth, 218 pages, 5¼ by 7¾. Published by The Macmillan Company, New York City.

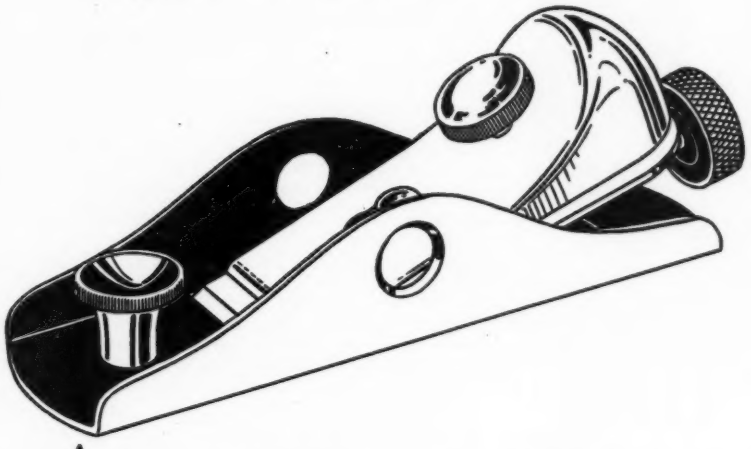
This is a very interesting and helpful book. It contains some very definite information on how to study, the importance of education, how to choose schools and courses of study, how to analyze yourself, how to choose your vocation, besides a number of studies on various vocations.

Very complete bibliographies form part of each lesson, as do also a series of questions which assist the student in getting at the meat of the matter. It is a book that can well be recommended for junior and senior high schools and for the full-time and part-time vocational schools.

(Continued on Page 26a)

Instructors of Woodworking

New Steel Block Plane *for* School Use



AS AN ANSWER to the demands for a simple, unbreakable block plane for the school shop, we now offer this new all-steel plane.

With a minimum of parts, this plane is practically "Boy-Proof." The 1⅝" cutter is held at a low angle. The lever cap is made of steel and is fitted with a large thumb screw.

The finger rest is permanently fixed. No mouth adjustment or lever cap screw.

We recommend this plane as the ideal block plane for school use and are grateful for the cooperation of our school friends in designing it.

Will be ready for the opening of school in September. Deliveries will be made about August 1st.

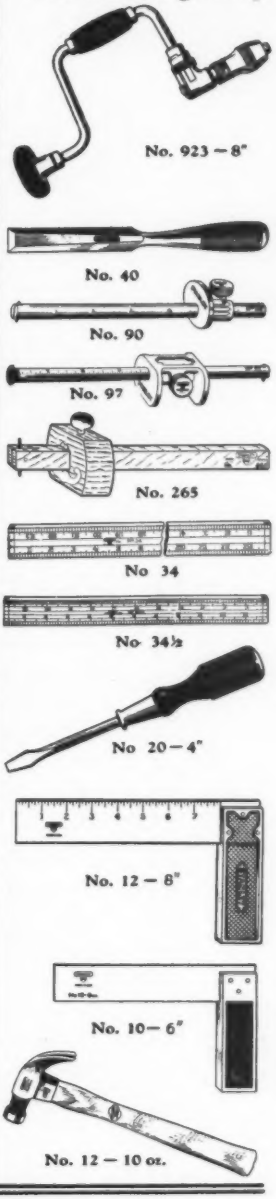
THE STANLEY RULE & LEVEL PLANT
Educational Department
New Britain, Conn.

STANLEY TOOLS

STANLEY EQUIPMENT IS STANDARD EQUIPMENT

STANLEY TOOLS

Stanley Tools for the Woodworking Shop



The Stanley Rule & Level Plant
Educational Department
New Britain, Conn.

Please send me copy of Stanley Tool Catalog No. 34—The Reference Book for Correct Shop Equipment.

*Name*_____

*Address*_____

See the Points?

Can you describe the "Point" of a twist drill?

Do you know what the "Dead Center" is?

Could you explain "Lip Clearance"?

Or "Margin" and "Body Clearance"?

These, and the answers to a dozen other questions, make the Handbook for Drillers the outstanding textbook on twist drills and drilling practice in America. The Handbook is now being used by several hundred vocational schools.

As our contribution to the cause of education in correct machine shop practice, we shall be pleased to forward to you any reasonable quantities of the Handbook for the use of your machine shop classes.

The CLEVELAND TWIST DRILL COMPANY CLEVELAND
NEW YORK-CHICAGO-LONDON SAN FRANCISCO
TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES

(Continued from Page 244)

Direct-Current Electricity

By L. Raymond Smith. Cloth, 262 pages, 5½ by 8, illustrated. Price, $2.00. Published by McGraw-Hill Book Company, New York City.

This is the third volume of a series of textbooks on industrial physics, the first one being on mechanics, the second on heat, and the present volume on direct-current electricity.

This handy little volume is specially to be recommended as a textbook. It contains a great deal of subject matter and is copiously and well illustrated. It is well adapted for teaching the fundamental principles of direct-current electricity.

How to Work with Tools and Wood

Cloth, 183 pages, 6 by 9. Published by The Stanley Rule & Level Plant, New Britain, Conn.

This book is very valuable for the student as well as the handy man about the house. It contains very explicit directions on the use of tools, describes how to make a working bench, how to sharpen tools, how work may be held together, how the various joints are made, how work may be laid out, and how to paint and finish a job after it has been completed. It is a book that ought to be on the reference shelf of everyone working with wood.

Electrical Trouble Shooting on the Motor Car and Airplane

By A. H. Packer. Flexible binding, 532 pages, 5¼ by 7¾, illustrated. Price, $4.00. Published by A. H. Packer, 8115 Harper Avenue, Chicago, Ill.

The author has succeeded in packing this volume which appears in its second edition with a great deal of valuable information for the trouble shooter. He has been enterprising enough to add a great deal of information on electrical work, applicable to the airplane. There are a number of questions appended at the end of each chapter and the answers to them can be found at the back of the book, so that the book is not only a valuable text in the classroom but also a great aid to anyone who desires to use it for home study work.

Short Course in Mechanical Drawing

By Wm. A. De Vette. Cloth, 141 pages, 5¾ by 8⅝, illustrated. Price, $1.36. Published by The Bruce Publishing Co., Milwaukee, Wis.

Mechanical drafting teachers will welcome this new text. It contains quite a number of splendid problems and is well illustrated. It also gives just the kind of information that is required on the question of spur, worm, and bevel gearing. A valuable addition to the book is the chapter on the solution of triangles which in a brief yet thorough manner gives the general information which the draftsman must have on this subject.

It is just the kind of textbook needed by the drafting student of the high school, the part-time and full-time vocational school, and the evening school.

Machine Shop Unit, Part I, Wisconsin Vocational Schools.

By W. C. Bahr, F. A. Boltz, and D. E. Weber. Published by McGraw-Hill Book Co., New York City. This is one of a series of mechanical trades arranged in the form of basic trade exercise or lesson sheets. It includes a description of the project, carefully worked-out demonstrations, and questions pertinent to the subject. The information sheets are direct excerpts from Burghardt's "Machine Tool Operation," and the projects are carried forward by means of process sheets. There are twelve processes in this particular part of the machine shop unit, the projects of which have been limited, both as to number and complexity.

Oxy-Acetylene Welding of Steel Pipe.

Paper, 72 pages. By O. S. Hagerman. Issued by the American Gas Association, New York, N. Y. The book contains the results of strength tests of steel pipe, both plain and welded, with information about welded rod and procedure controls, and the use of templets in the layout of welded pipe fittings. The material has been generally approved and should prove of value to all engaged in the welding of steel pipe.

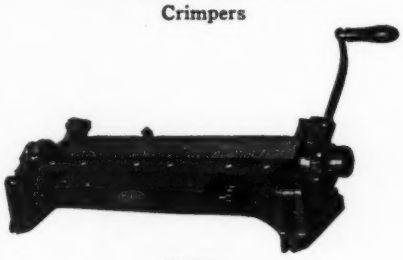
(Continued on Page 28a)

Squaring Shears

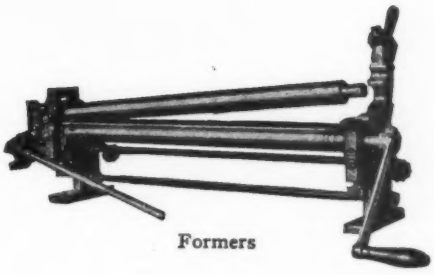
Crimpers

Turning
Wiring
Burring
Beading
Machines

Groovers



Folders



Formers

What's in a Name!

High grade materials, good workmanship, advanced construction, low initial cost, and a record small up-keep sum up what the PEXTO trade-mark on a sheet metal working machine implies.

More than that, you assume no risk or disappointment on a PEXTO decision. If your dealer is not a "PEXTO SERVICE DEALER," immediate shipment can be had from factory.

THE PECK, STOW & WILCOX COMPANY

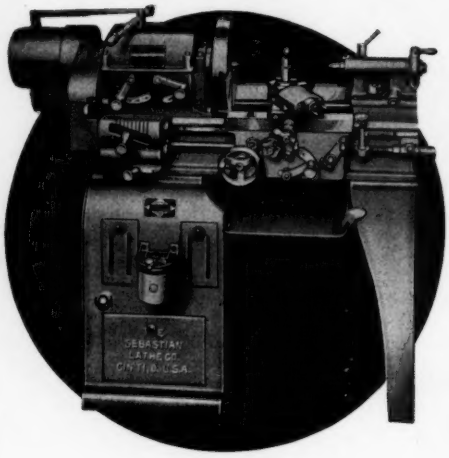
Southington, Conn., U. S. A.

PEXTO

Your Insurance – Over 100 Years of Conservative Growth

New Lathes for Next Fall's Classes

If they are bought on these specifications you are ASSURED of ABSOLUTE SATISFACTION



(....) Lathes Gold Seal or equal—Swing 11", bed length 4', to be 8 speed geared head, full quick change box with no loose gears, to cut threads 6-96, feeds .00175 to .111, all steel gears, 1 1/16" hole through spindle, collet capacity 7/8", bearings of main spindle 2 1/16x2 3/4—1 1/8x2 1/4", to be taper gibbed throughout, motor drive with motor fitted in leg under headstock with a tool cabinet in the leg below the motor compartment, tumbler yoke for cutting left-hand threads with the depth of the teeth already adjusted on the quadrant for throwing over to a left-hand thread, lathe to be bronze bushed wherever required. Macit tool post screw. Silent chain drive with easy adjustment for stretch in the chain, lathe to be fitted with a safety shearing pin, graduated compound rest and tailstock bases, tailstock center oiler, friction type collars on compound rest and cross feed with these collars graduated, accuracy alignment test .0005, motor and control to be (Specify here type current and type of control wanted). Each lathe to be furnished with a chip pan, depth thread chasing stop, centers, thread chasing dial, steady rest, and wrenches. The lathes shall all be furnished with all gears guarded by cast iron guards, and the operation of the lathe for stop and start shall be through a friction on the headstock controlled by a lever within easy reach of the operator so that the motor can run constantly when machine is in operation. The apron of the lathe shall have a safety device to prevent both longitudinal feeds being thrown in at the same time.

Add here list of extras wanted such as, Chucks, Taper Attachment, Draw-in Attachment, Collets, Tools, Dogs, etc.

Tell us your lathe requirements. We will be glad to send literature on Sebastian Gold Seal Lathes

THE SEBASTIAN LATHE CO.
CINCINNATI, OHIO
NEW YORK OFFICE - Room 372 - 50 Church St.

(Continued from Page 26a)

The Story of Eastman Classroom Films.

Paper, 18 pages. Published by the Eastman Kodak Company, Rochester, N. Y. The pamphlet gives the results of an experiment to test the teaching value of Eastman classroom films, which was conducted with the aid of school authorities in twelve cities. While most of the films are classed under general heads, this fact does not place a limit on their usefulness. Each film is made for use in connection with a particular topic in a definite subject, but it may also be used with many other topics and several other subjects. The experiment proved that the films possessed much rich teaching material and are an effective teaching agency. The Eastman Company has developed a series of portable projectors, which are made in three models, also classroom screens especially adapted to classroom use. A special narrow-width film is used, which makes it possible to produce classroom films at a cost well within the financial ability of most schools.

MR. BRUNTON APPOINTED STATE SUPERVISOR FOR PENNSYLVANIA

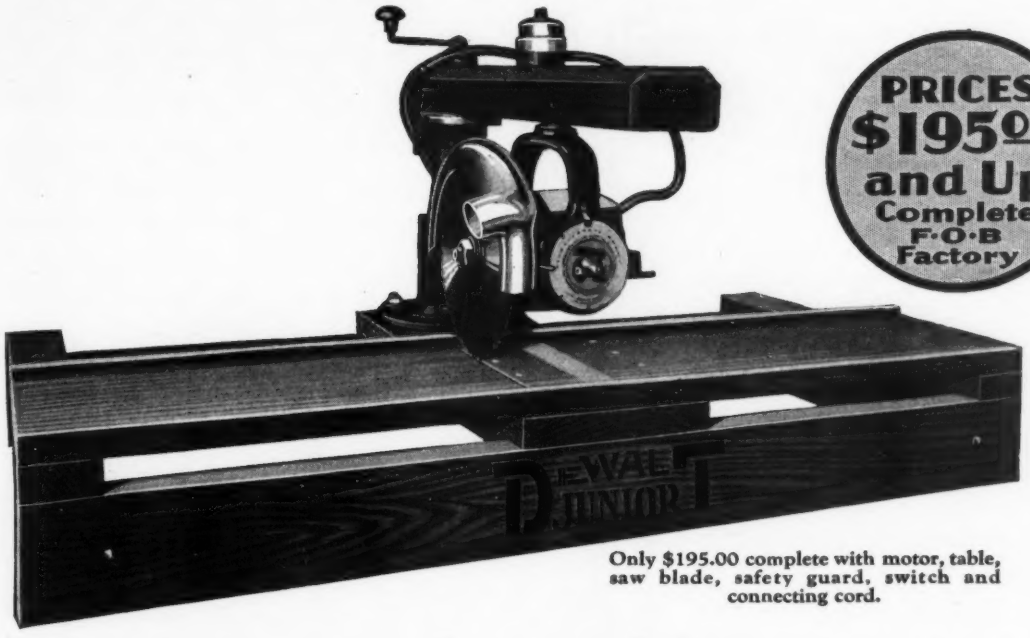
Mr. William Brunton, director of vocational education at Lancaster, Pa., has recently been appointed state supervisor of industrial education in the state vocational department at Harrisburg, Pa. The appointment becomes effective on July 1, when Mr. C. E. Hedden, the present incumbent, leaves to take a position at Amsterdam, N. Y.

Mr. Brunton is a graduate of the Williamson Trade School, and the Philadelphia Marine Engineering School, and has completed trade extension work with the University of Pennsylvania and the Pennsylvania State College.

WM. E. BRUNTON
State Supervisor of Industrial Education,
Harrisburg, Pa.

Prior to coming to Lancaster, Mr. Brunton was a machinist trade instructor in Chester. He taught two years at the Williamson Trade School, and two years in the electrical department of the Keystone Institute at Reading, and has had considerable experience in industry as a draftsman and machinist. He has acted as director of vocational education at Lancaster for the last four years, during which time new programs in industrial arts were introduced for the junior high schools, trade preparatory education, apprenticeship education, part-time cooperative education, and cooperative retail salesmanship courses.

(Continued on Page 30a)



PRICES $195.00 and Up Complete F.O.B Factory

Only $195.00 complete with motor, table, saw blade, safety guard, switch and connecting cord.

Practical wood working training

for elementary or advanced work

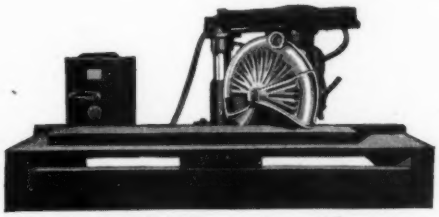
Wherever practical training is an established principle, DeWalt Wood Working Machines are meeting with unqualified success.

Used in all branches of wood working—building operations, planing mills, lumber yards, industrial plants, etc.—DeWalt Wood Workers have proved their effectiveness under actual working conditions. They are thoroughly practical "field" machines that provide thoroughly practical wood working training.

The new "Junior" DeWalt, for instance, readily handles material up to two inches thick with all the ease, accuracy and safety so characteristic of the standard DeWalt Wonder Worker—from the simplest rip or cross-cut to the most complicated compound mitre cut.

We'll gladly arrange a complete demonstration at any time in your school shop—at your convenience.

DeWALT Band Saw



Standard DeWALT complete with motor, table, saw blade, safety guard, switch and connecting cord.

DeWALT Jointer

"JUNIOR" DeWALT *All Purpose* Wood Worker

DeWalt Products Corporation
707 New Holland Ave., Leola, Penna.

Please let me have complete particulars about the many advantages of the "Junior" DeWalt in our school shop.

Your Name.....

School Name.....

Address.....

"Yankee"

In the school shop

GOOD tools in the school shop pay handsome dividends in the school's product.

Good tools invite respect from the user . . . add to the student's interest in manual training . . . inspire the boy to do a better job . . . help a school to turn out better workmen.

Men who drive many screws and have many holes to bore, will tell you that "Yankee" Tools cannot be copied in ingenuity and efficiency—and that they look for the name "Yankee" when they buy an automatic push drill.

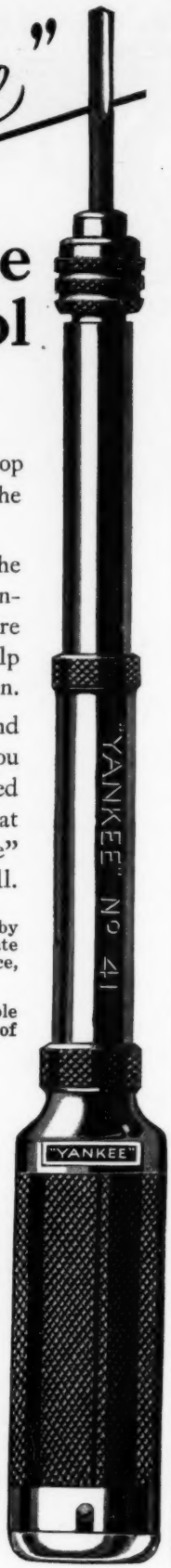
"Yankee" Push Drill No. 41.—Used by mechanics everywhere as the working mate of "Yankee" Spiral Screw-driver. Price, $2.60.

"Yankee" Push Drill No. 44.—Adjustable Tension regulates pressure to suit kind of wood, size of drill, etc. Price, $3.15.

Eight "Yankee" Drill-Points, 1/16" to 11/64", supplied in magazine in handle. Each drill-point tested!

"YANKEE" TOOL BOOK, sent on request, shows such unusual tools as Quick-Return Spiral Screw-drivers, Two-speed (11-inch) Hand Drills, Bit Braces with famous "Yankee" Ratchet, Removable-base Vises, Etc.

NORTH BROS. MFG. CO., Philadelphia, U. S. A.



"YANKEE"

on the tool you buy means the utmost

quality, efficiency, durability

(Continued from Page 28a)

MR. E. W. MANZER, supervisor of manual arts at Bronxville, N. Y., will assist Professor W. H. Varnum at the summer session at the University of Wisconsin in a course on jewelry and pewter work.

ROBERT W. TARBELL of the department of teacher training and research of the Milwaukee Vocational School, will conduct courses in vocational education at the State Teachers' College at Oshkosh, Wis., during the coming summer session.

MISS MARY BEEMAN, state supervisor of home economics in Indiana for the last five years, has resigned her position, to become a member of the staff of the Ball Teachers' College at Muncie.

MR. FRED C. LAMPE, formerly educational director of Barnhart Brothers & Spindler, has recently accepted the position of assistant to Mr. Frank Phillips of the American Type Founders Company. He will make Chicago his headquarters.

MR. GEORGE E. WALLACE of Bessemer, Ala., has been appointed assistant supervisor of industrial education of Alabama. Mr. Wallace has been principal of the Jonesboro School at Bessemer and director of vocational education in the city schools.

MR. ROY W. MCLAIN of Bedford, Iowa, has accepted a position as manual-training instructor at Davenport.

MR. FREDERICK W. VOSS who had charge of the department of woodworking at the Waukegan Township High School, Waukegan, Illinois, and an article by whose hand appears in this issue, died recently.

MR. J. ERNEST WAGNER, formerly supervisor of industrial arts at Johnstown, Pa., has been elected as director of vocational education, to succeed Mr. James Killius. Mr. Wagner had been director of industrial arts for the last four years, and previous to that, had taught mechanical drawing and machine woodworking in the junior and senior high schools.

In his new position, Mr. Wagner will be in charge of all the vocational work, comprising the shopwork for the grade buildings, the exploratory courses in the junior high schools, the Smith-Hughes unit-trade courses in the senior high school, and the evening and continuation-school activities.

MR. PAUL A. BOENING, formerly an instructor in the plumbing shop of the Boys' Technical High School, Milwaukee, Wis., died at his home on April 14, after a two-year illness. Mr. Boening had taught at the Boys' Technical High School for eleven years. He entered the school in December, 1914, where he remained until September, 1918, when he resigned. In January, 1922, he returned to teaching and remained a member of the faculty until forced to retire because of illness. Mr. Boening had worked at the plumbing trade for 25 years prior to entering the teaching profession.

MR. D. M. BURKHISER has been appointed instructor in manual training at Washta, Iowa.

MR. ERNEST L. BOWMAN of Columbus, Ohio, has been appointed state director of trade and vocational education in Connecticut, to succeed F. J. Trinder who has resigned. Mr. Bowman was for four years instructor in industrial education in the Pennsylvania State College, was director of trade education in Erie, Pa., was for five years director of the educational work for the plumbing and heating bureau, and recently had acted as educational director for the National Clay Products Extension Bureau in Columbus.

MR. MAURICE CALDWELL of Hastings, Iowa, has been appointed instructor in manual training at Bedford, to succeed Mr. R. W. McLain.

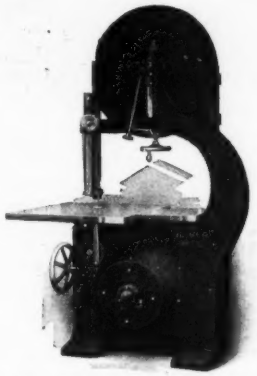
MR. ALLEN D. BACKUS, formerly supervisor of manual training at Newark, N. J., has been made director of the department of manual training.

School Shop Equipment News

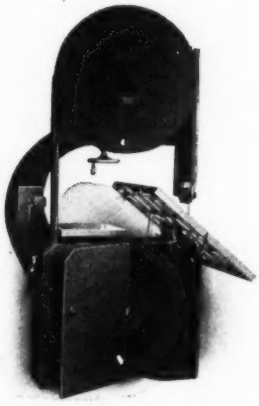
For the Supervisor and Teacher who desires to keep abreast with news of new Machinery, Tools, Supplies, etc.

NEW OLIVER HIGH-SPEED BAND SAW

The Oliver Machinery Company of Grand Rapids, Mich., has announced a new No. 116 high-speed band saw, the design, construction, finish and efficiency of which deserves much praise.



It is driven with the motor and lower wheel on the same shaft, using the unit construction and motor parts in the main frame, and is capable of 750, 900, and more r.p.m. The machine is ball bearing throughout, and is equipped with external contracting quick-stop brake for stopping the machine when a saw change is desirable or necessary.



Both upper and lower wheels are of the disk type, with aluminum rims faced with rubber. The rim is demountable and has dove-tail grooves into which the rubber tire is vulcanized. The demountable rims are easily resurfaced with rubber. The disk wheels are light and safe. There is no windage and no danger of getting caught in the spokes.

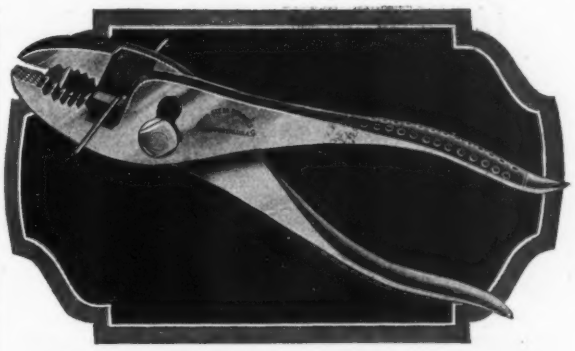
The 36 by 36-in. cast-iron table tilts by means of a hand-wheel, worm and gear, and a patent roller frictionless device guides the saw both above and below the table. The table of the band saw is ground to reduce the force necessary to push the work past the saw.

NEW NIAGARA SLIP-ROLL FORMER

The Niagara Machine & Tool Works of Niagara Falls, N. Y., has recently added a new type 3-in. slip-roll former, to the line of sheet-metal equipment which they manufacture.

The former is of geared construction and is arranged with the top roll pivoted at the left end, and is arranged to swing forward for the removal of finished work. It may be locked in the operating position by a quick releasing trigger mechanism. It is available in three sizes—3 by 36 in., 3 by 42 in.,

(Continued on Page 34a)



Vacuum Grip No. 137, the Ideal All-around Pliers for the Classroom. See description below.

Purchasing pliers on a true economy basis

PLIERS are invariably subjected to hard use, in any classroom. The extra strength and durability of Vacuum Grip Pliers is the Supervisor's assurance that his budget for pliers will be applied on a true economy basis, when these famous long-wearing pliers are specified.

The beautiful lines and high nickel finish of Vacuum Grip Pliers are not a mere "surface lure." The quality they indicate goes right through to the very core. Vacuum Grip Pliers are NOT CASE HARDENED but hardened and tempered *thru and thru.*

This—and the fact that they are hammer-forged from F.S.P. analysis alloy tool steel—explains their ability to withstand tremendous stresses, and also why they retain their cutting edges and sharp teeth indefinitely.

Made in accordance with the most exacting precision standards—cutters in true alignment—smooth, easy-riding joints. A pleasure to handle and an inspiration to the boy who uses them.

No. 137—the "All Use" Pliers

The choice of many schools because of their versatility. Vacuum Grip No. 137 takes care of practically every job calling for pliers. Adjustable joint handles pipe, rod or any shape nut up to 1¼" diameter. The full fashioned, spring tempered "Vacuum Grip" handles afford a sure grip, while the specially milled teeth give maximum gripping power with minimum handle pressure.

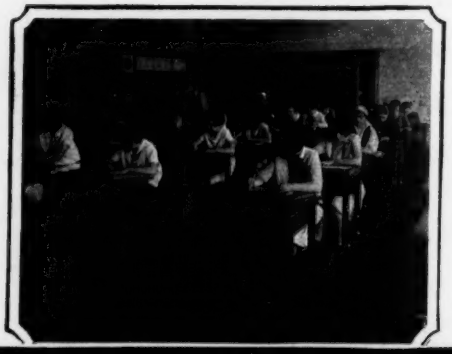
TO SUPERVISORS: Before deciding on your pliers equipment it will be to your advantage to investigate Vacuum Grip Pliers. Write for prices of No. 137 in dozen lots or less. Send for catalog illustrating over forty patterns and sizes.

FORGED STEEL PRODUCTS CO.
Newport, Pa.

Vacuum Grip
REG. U.S. PAT. OFFICE
Pliers

Built UP to a Standard Not DOWN to a Price

Used and Endorsed by Leading Manual Training Schools



Drawing Tables for High Schools

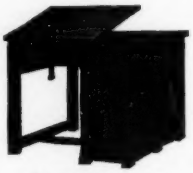
Kewaunee Art and Mechanical Drawing Tables, for both High School and Junior High School use, are practical and economical.

The two shown on the right are among the most popular in the Kewaunee Line. As will be seen, they provide perpendicular private compartments for drawing boards, instruments and materials. No. 400 provides for six pupils. It has 6 drawing board compartments and six individual drawers for tools and supplies of six students.

Art Table No. 400
For Six Students

No. 410 is for three students. It has a general drawer that provides space for classroom equipment. There are three drawing board compartments, all opening at the front.

The tops are adjustable. The cabinet work is extra fine; each table is firm and rugged—able to stand years of hard use.



Art Table No. 410
For Three Students

We are manufacturers of a very complete line of Art and Mechanical Drawing Tables. Write for our complete book of illustrations.

Kewaunee Mfg. Co.
LABORATORY FURNITURE EXPERTS

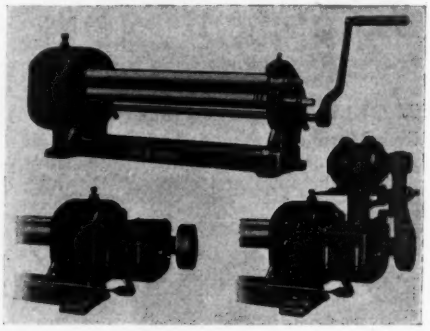
Adrian Factory
C. G. CAMPBELL, Pres. and Gen. Mgr.
Designers and Manufacturers of Art and Mechanical Drawing Room Furniture for Schools and Colleges
1 End South Center St.,
ADRIAN, MICHIGAN

SEE OUR DATA IN BRUCE'S SPECIFICATION ANNUAL 1929 EDITION

Kewaunee

(Continued from Page 33a)

and 3 by 48 in., and is adapted for hand operation, pulley drive, or belted motor drive.



The machine is single-geared, yet is capable of maximum capacities, without the speed reduction required by double back-geared rolls. All three rolls are positively driven, making possible the rolling of small diameters. The gears are arranged in a gear train so that they are always in proper mesh when the upper roll is swung forward, or when the rolls are separated for handling folded edges. The left-hand housing completely encloses the gear assembly and provides for easy lubrication. Adjustment of the lower front and rear rolls is provided through knurled screws, without the use of wrenches. All gears are of steel, machine cut, and are extremely quiet in operation. The drive shaft is mounted on ball bearings and the gears are operated in a bath of oil, insuring the proper lubrication for all moving parts.

NEW PAASCHE AIRBRUSH LACQUERING UNIT

School shops will be interested in a new spray painting unit which has just been placed on the market by the Paasche Airbrush Company of Chicago, Ill. It is known as the Paasche household lacquering unit and offers a new, easy way to paint, lacquer, and varnish all kinds of woodworking projects. The new unit is designed to insure beautiful results in color, smoothness, and richness of effect.

Manual-training classes will be interested in this new inexpensive unit for teaching the latest air-finishing method.

Complete information and prices may be obtained by writing to the Paasche Airbrush Company at 1909 Diversey Parkway, Chicago, Ill.

Prize Winner in the Simonds Economic Contest.

Mr. Robert F. Elder, specialist in market research, was recently awarded the Alvan T. Simonds award of $1,000 for the best essay on "Reducing the Costs of Distribution" for the year 1928. Honorable mention was given to Mr. Ray M. Hudson, assistant editor in the bureau of standards of the U. S. Department of Commerce. The awards were made by a committee of judges, comprising Dr. F. E. Clark of Northwestern University; Dr. Donald Cowan of Swift & Company; and Mr. E. E. Ames of the General Box Company.

(Continued on Page 36a)

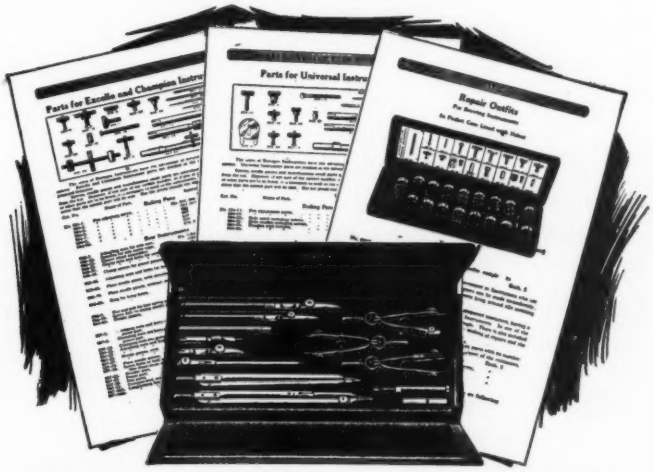
"Standardized"

DIETZGEN

Instruments

Absolute Standardization as obtained in Dietzgen Drawing Instruments is of extreme importance. It means that no member of a Dietzgen equipped class need ever work with any instrument that is not in the same perfect condition in which it left the factory. For the **Dietzgen Service Kit** of standardized replacement parts enables any instructor to repair, in less than five minutes, any damage caused by student carelessness.

Another standardization feature is the division of the Dietzgen line of Drawing Instruments into 10 definite grades corresponding to and exactly meeting the requirements of the different school drafting courses. These grades are not alone gradations of quality and price, but are rather the selection of exactly the type and style of instruments best suited to fulfill each definite requirement from elementary school to college and professional use.



Here is illustrated Universal Drawing Instrument Set No. 1057 C—a popular set for high school and vocational school use. The catalog pages in the background describe replacement parts and Dietzgen Service Kits.

The principal dealer in each city carries Dietzgen Drawing Instruments — or write to one of our branches for complete information.

Dietzgen makes 10 grades of instruments in two types:

Square or Trigonal Type
"Gem Union"
"Federal"
"Reliance"
"Scholar"

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Enduring worth at reasonable cost

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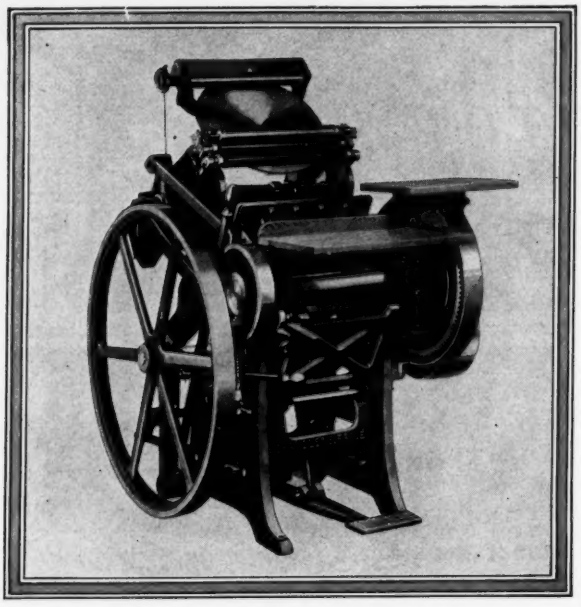
Milwaukee **Los Angeles**
Factory at Chicago

Manufacturers of Drafting and Surveying Supplies

Flat-round Type
"Excello"
"Champion"
"Universal"
"Dependo"
"Prep"
"Elementary"



Chandler & Price Presses in schools perform a great direct service and just as great an indirect service.

Sugar-coated Doses

GRAMMAR, syntax, rhetoric! How hard a dose for many an up-and-coming boy to take! Especially if mastering these subjects is purely a matter of "getting his lessons."

But to do, to accomplish, to create—that's different! To turn out beautiful work on a printing press, and indirectly, but none the less necessarily, absorb the basic rules of language without which his achievements would be marred,—there's the system that gets results.

In thus *producing*, the appreciation of beautiful things also comes as a matter of course. The blending of color, the need of symmetry, the importance of design, the virtues of good taste,—all these gentler values come, too, as corollaries of action.

Chandler & Price Printing Presses are serving a very real end in the educational world. It is always a pleasure to discuss your requirements with you.

Chandler & Price
PRESSES & PAPER CUTTERS

THE CHANDLER & PRICE COMPANY
Cleveland, Ohio, U. S. A.

(Continued from Page 34a)

SPRING ISSUE OF SAW KERF

The new spring issue of The Saw Kerf, published by The E. C. Atkins Company of Indianapolis, Ind., has just come off the press. This little magazine goes to over 45,000 saw users throughout the country.

The new issue has an interesting pictorial cover in two colors, and is full of helpful information. The issue contains a total of 58 articles and 30 illustrations which should prove helpful and stimulating to filers, shop instructors and foremen, and anyone engaged in the operation of saws.

ASSOCIATION AND CONVENTION ACTIVITIES

(Continued from Page 243)

president of the New York School of Fine and Applied Art, gave a talk on "Modern Art and Hereafter."

The Convention in General

The convention was undoubtedly an outstanding event and much credit is due president-elect, Joseph Wiseltier, and his able assistants for the very attractive program. The New York convention committee, under the direction of Forest Grant as general chairman, should be given credit for their accomplishment. Mr. Erik A. Andersen, the president of the association, handled the various meetings in a pleasing and masterly manner and to him much credit is due for the success of the convention. The association had a total of 1,009 registered this year and at the present time has a membership list of 2,147.

Any organization, whatever its purpose may be, must in a large measure, depend for its success in carrying out of its objectives upon certain "king pins." The E.A.A. has been fortunate in the selection of its "king pins," which include many men of prominence in the art and industrial-arts field, —but even "king pins" need a leader, and in the Eastern Arts Association, that leader is our hard-working secretary, Frank E. Mathewson, to whom credit should be given for his untiring efforts in building up the association from a membership of 372 in 1927 to a paid-up membership of 2,147 in 1929. Secretary Mathewson's work in building up the association, and planning the convention, is unique, and it is such work that makes associations of this kind a valuable asset to the profession.

The following officers were elected for the 1929-30: President, Joseph Wiseltier, Hartford, Conn.; vice-president, Forrest Grant, art director, New York City schools.

Members of the Council: Mr. John C. Brodhead, Boston, Mass.; Waldo Bates, Edinboro, Pa.; Joseph H. Constantine, Passaic, N. J., and Miss Alice Smailes, Providence, R. I.

The next convention will be held April 23 to 26 at Boston, Mass. Mr. John Brodhead has been elected chairman of the local committee on arrangements.—*Arthur F. Hopper.*

NORTHWESTERN PENNSYLVANIA ARTS ASSOCIATION MEETING

The Northwestern Arts Association of Pennsylvania held its annual meeting, April 27, at Edinboro State Teachers' College, Edinboro, Pa. The general session, which was attended by groups representing agriculture, art, commercial studies, home economics, and trade and industrial arts, was held in the morning. Sectional meetings for each group were held in the afternoon.

Mr. C. Valentine Kirby, director of art education, Harrisburg, addressed the general session on "Applied Art," stressing the fact that art is an outgrowth of civilization and that our dress and homes reflect that civilization. He said that art enters everything in life and that it is our duty in education to provide experiences for making the students intelligent users or consumers of art. Mr. Kirby pointed out that past civilizations are remembered chiefly for their contributions to art.

That education is being criticized and that we must soon be ready to defend or sell education again to the public, was the challenge of Mr. C. W. McNary, principal of the Academy High School, Erie, Pa. Speaking on the subject "More Education for the Money," Mr. McNary said, "We must seriously consider the criticisms that we are training for mediocracy in this age of standardization and mass production; that the development of pleasing personalities and ethical character are set aside for methods, scientific tests,

(Continued on Page 39a)

Saving Precious Moments of Class Time

Sheldon builds drawing tables to accommodate from one to eight students with private drawing board and instrument lockers for each student. There is a type to meet every requirement.

The illustration shows the convenience and efficiency which the private locker affords. There is no time wasted standing in line before wall lockers. The student can go directly to his table and be at work immediately and he can work right up to the last minute of the period. Tests show that from eight to ten minutes of each class period are wasted when wall lockers are used.

Sheldon drawing tables are built of heavy material and are completely bolt re-enforced. They will give a life time of service.

E. H. SHELDON & CO.

Laboratory, Home Economics and Vocational Furniture

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(Continued from Page 36a)

and standardized courses; that too many teachers are concerned with the production of material products (furniture, typists, artists, etc.) and very often neglect the real purpose of education—a thinking individual with the right kind of personality and character." He closed his address with the statement, "If standardization and mass production work havoc with the proper education of American youth, it is up to the classroom teacher to rise up against it, and to fight for more education and less instruction."

Mr. R. D. Welch, superintendent of schools, Kane, Pa., spoke on "The Purpose of High-School Commercial Courses." He emphasized the changing conceptions regarding the value of the subjects and gave as the purposes of commercial courses the development of thinking individuals, the avoidance of waste, the development of character and ethical business principles, and the graduation of pupils capable of entering business with an acceptable working ability in speed and accuracy.

The trade and industrial-arts section meeting was addressed by Mr. Paul L. Cressman, assistant director of vocational education, Harrisburg, on the subject "Why a Vocational Program?" Mr. Cressman showed that industries continually change and that it is up to vocational education to keep abreast of these advances by incorporating instruction which offers opportunities for mechanics.

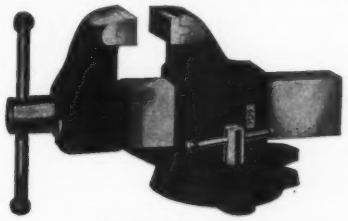
Mr. Ralph S. Dewey, superintendent of schools, Corry, Pa., spoke on "Keeping Boys in Schools Through a Vocational Program." He presented charts showing by statistics over a period of years, that the city of Corry has increased the percentage of boys remaining in school through the introduction of vocational and industrial-arts classes.

Mr. William Seitz, Erie, Pa., gave a report of his impressions of the trade and industrial-arts programs of Passaic, N. J.

"Industrial Training—Where?" was the subject of Mr. Glennis Rickert, Kane, Pa. Mr. Rickert favored the establish-

(Continued on Page 40a)

For Craftsman Or Student



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Have you had our special charts for the Industrial Arts instructor? And the booklet "How to select, use and care for Bits"? We would like to send them to you.

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Sole manufacturers of the Genuine

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(Continued from Page 39a)

ment of a school where education could be secured in cafeteria style—where anyone, at any time, could receive the instruction necessary for his future work.

The officers elected for the trade and industrial-arts section meeting for the next year are Mr. Alfred Humphreys, Erie, chairman; Mr. Edwin Youngbluth, Erie, secretary-treasurer.

The meeting place selected for the Northwestern Arts Association for 1930 is Corry, Pa. Mr. Charles F. Hoffmaster, Corry, was elected president; Miss Cora Pearce, Erie, vice-president; and Miss Ruth A. Tillotson, Warren, secretary-treasurer.—*John F. Faber.*

NEWS AND NOTES

U. S. Civil Service Examination.

The U. S. Civil Service Commission has announced an examination for associate commercial agent to be held not later than May 21, at Washington, D. C., The examination is to fill vacancies in the bureau of foreign and domestic commerce and the position carries a salary of $2,300 per year.

Civil Service Examination for Warehouse Examiner.

The U. S. Civil Service Commission has announced an examination for warehouse examiner, to be held May 21, at Washington, D. C. The examination is to fill vacancies in the bureau of agricultural economics of the Department of Agriculture, and will include duties in connection with the administration of the warehouse act. The position carries salaries ranging from $3,200 to $3,700 a year for the associate grade, and $2,600 to $3,100 a year for assistant grade. Complete information may be obtained from the U. S. Civil Service Commission at Washington, or from the secretary of the board of examiners at any post office or customhouse.

U. S. Civil Service Examination.

The U. S. Civil Service Commission has announced open competitive examinations for teachers in junior and senior high schools and elementary teachers, to be held not later than May 22, at Washington, D. C. The examination is to fill vacancies in the Indian service and in positions requiring similar qualifications. The positions carry salaries ranging from $2,000 to $2,900 per year. Full information may be obtained from the U. S. Civil Service Commission at Washington, or the secretary of the civil service board of examiners at any post office or customhouse in the city.

Vocational Guidance for Teachers.

Courses in vocational guidance and occupational information for teachers of the industrial arts are being offered in the Boys' Continuation School at Brooklyn, N. Y.

Hold Second Model Airplane Contest.

More than 300 model airplane builders from every part of the United States will meet at Detroit, Mich., on June 20, for the second national airplane contest to be held under the auspices of the National Aeronautic Association and the American Boy Magazine. A number of special awards have been provided, including $3,000 in cash prizes, three trips to Europe, six cups, 198 medals, and a number of special prizes.

Bird-House Contest at Sleepy Eye, Minn.

The manual-training department of the Springfield School at Sleepy Eye, Minn., recently held a bird-house contest. Prizes of $4, $3, $2, and $1 were awarded for the best bird houses.

Build Addition to La Crosse Vocational School.

An addition of seven rooms will be built to the vocational school at La Crosse, Wis. The addition will provide space for a general metal-working shop, where students will be given instruction in machine-shop work, sheet-metal work, welding, and other forms of metal work.